Gas Journal

VOL. 282. 107th YEAR. LONDON, MAY 4, 1955. No. 4796. PRICE 1/3

TECHNOLOGY DEPT.

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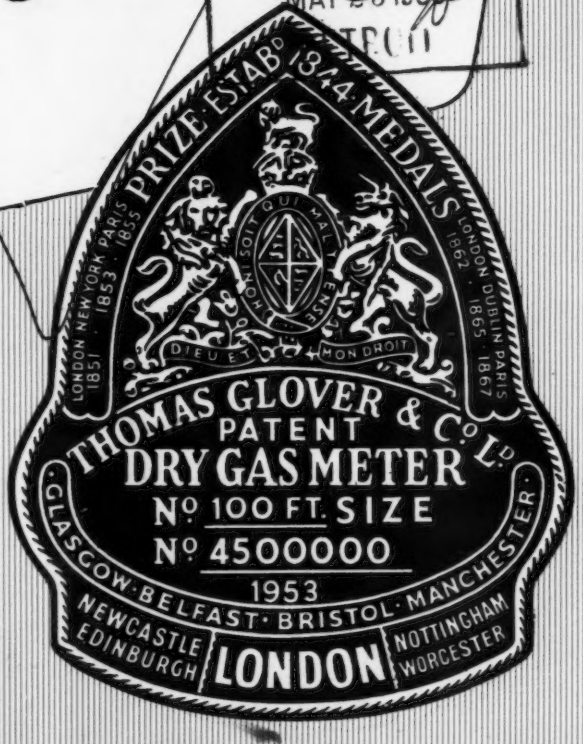

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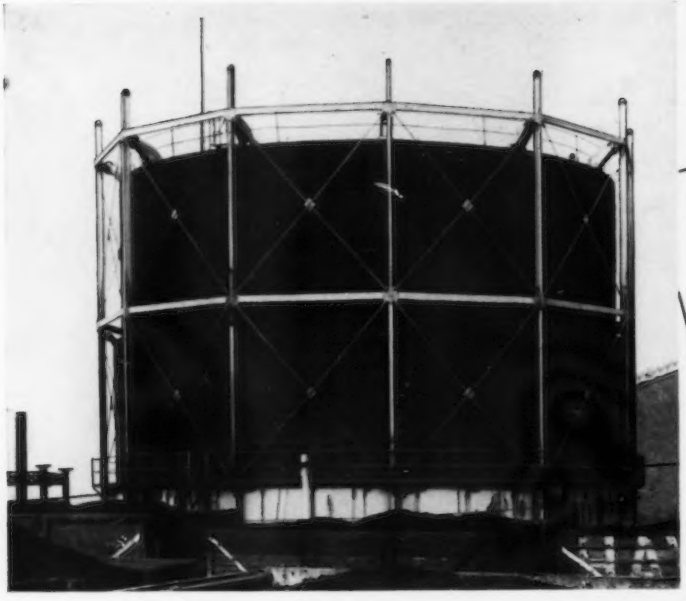

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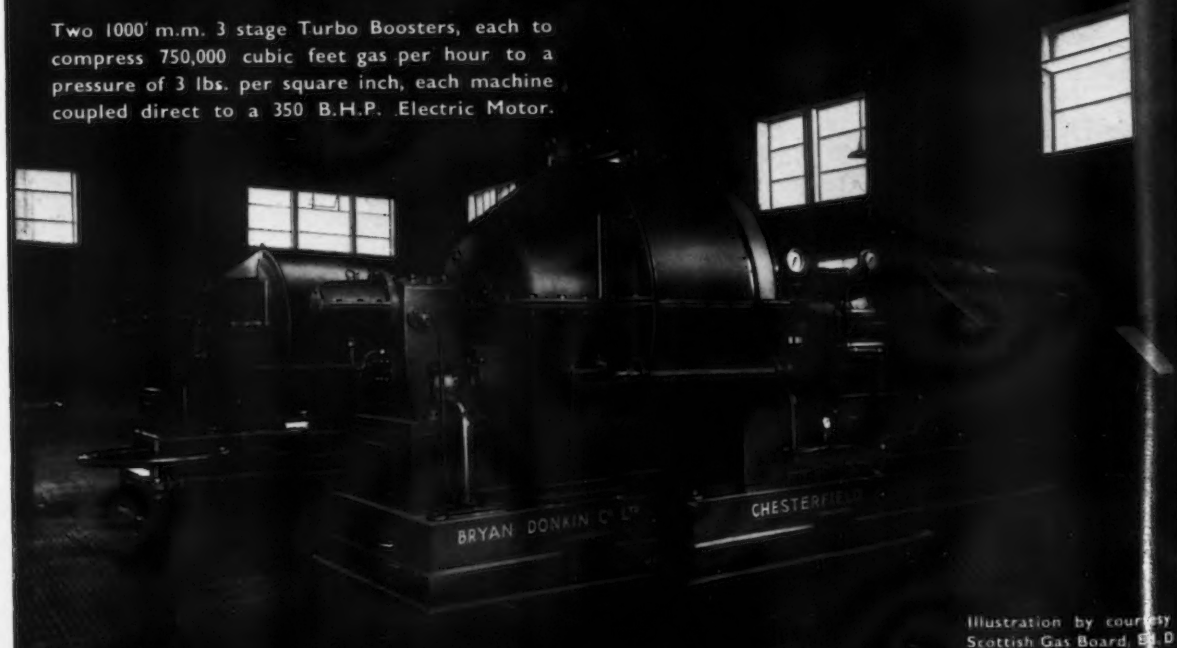

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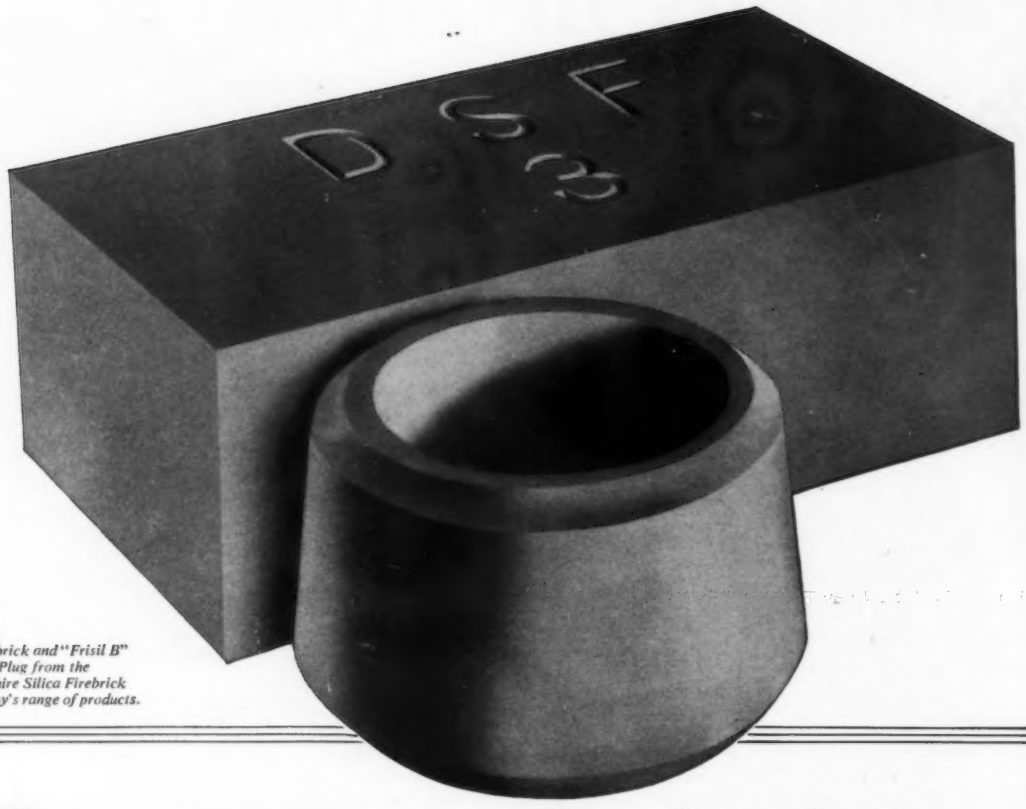

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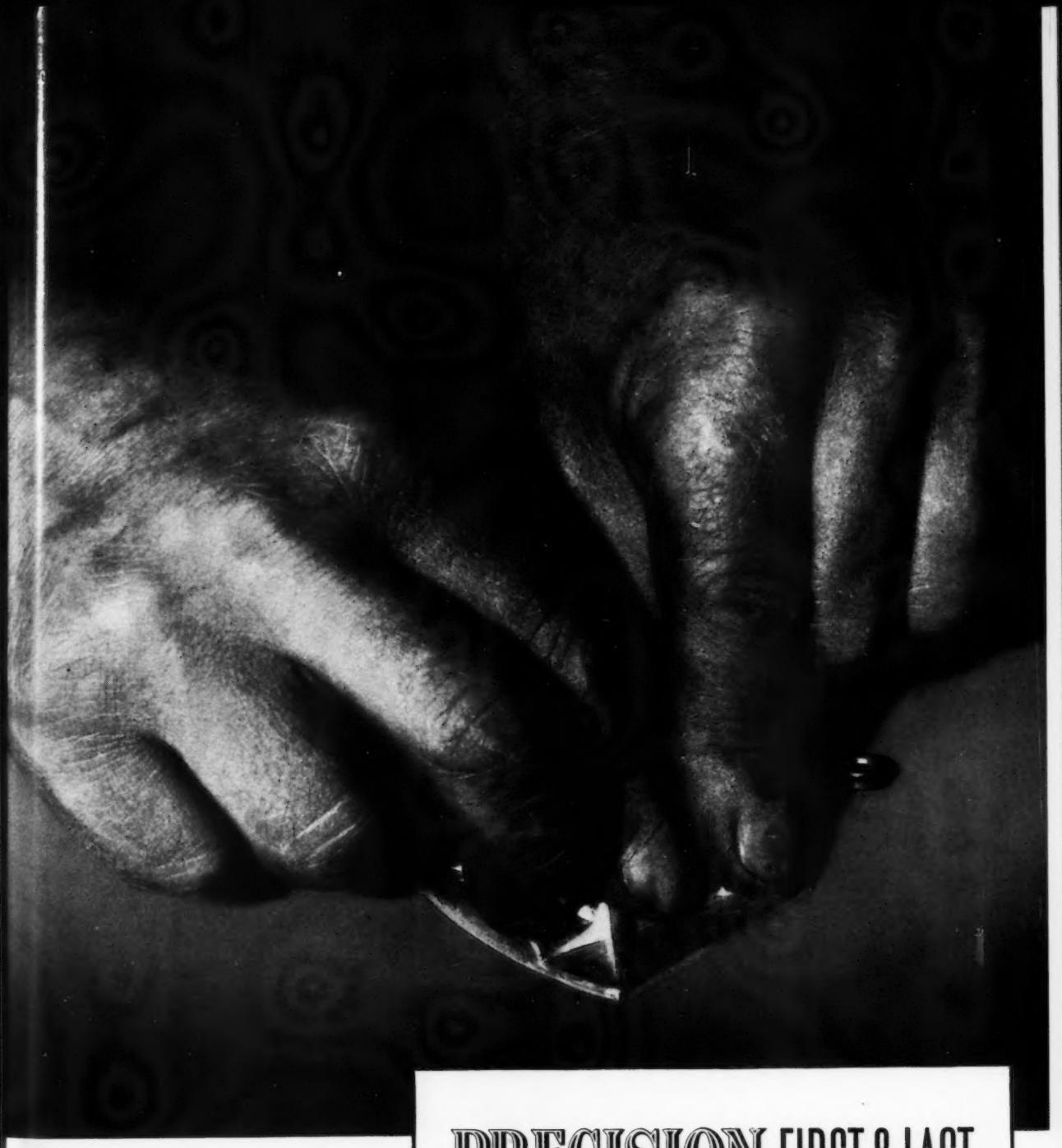

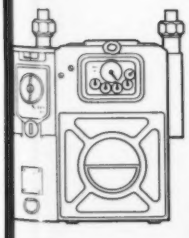

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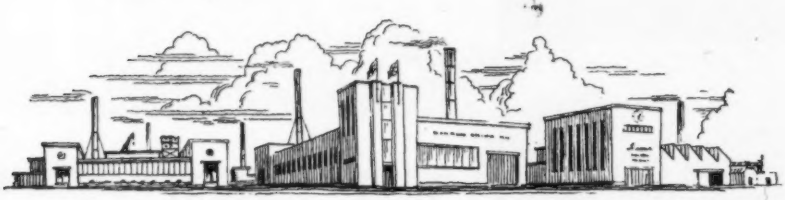
- Greatest value for low initial cost —free of Purchase Tax.
- Releases valuable production space — provides healthy conditions for employees.



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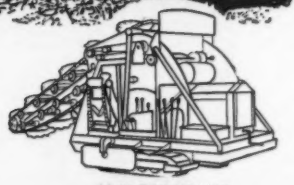

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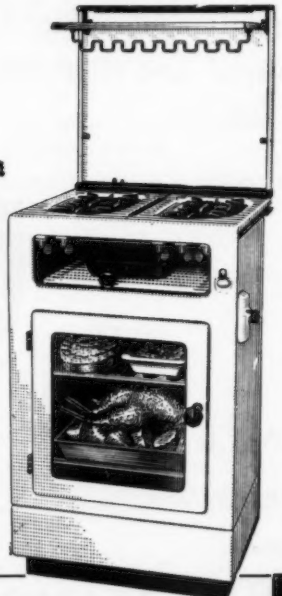
Kitchen-wise women choose

Vulcan

The glass door cooker with the *Extra* features!

Popular though it is, the non-misting glass door is but one reason why so many women decide on a VULCAN. They see the handy plinth drawer . . . self-locating grill pan . . . easy-to-clean finish inside as well as out. With its smooth-fitting, light-weight parts, the VULCAN is so easy to look after!



- *Fully-guaranteed Armourplate glass door.*
- *Retains full oven heat, can't steam over.*
- *Automatic regulator gives* double control.
- *Roomy plinth drawer.*
- *Self-locating grill pan.*
- *Fully-furnished oven.*
- *Good choice of finishes and oven capacities.*

Vulcan *DOUBLE-CONTROL*

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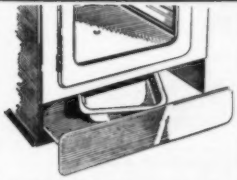
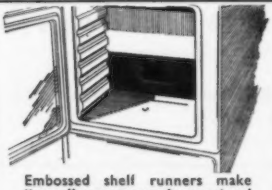


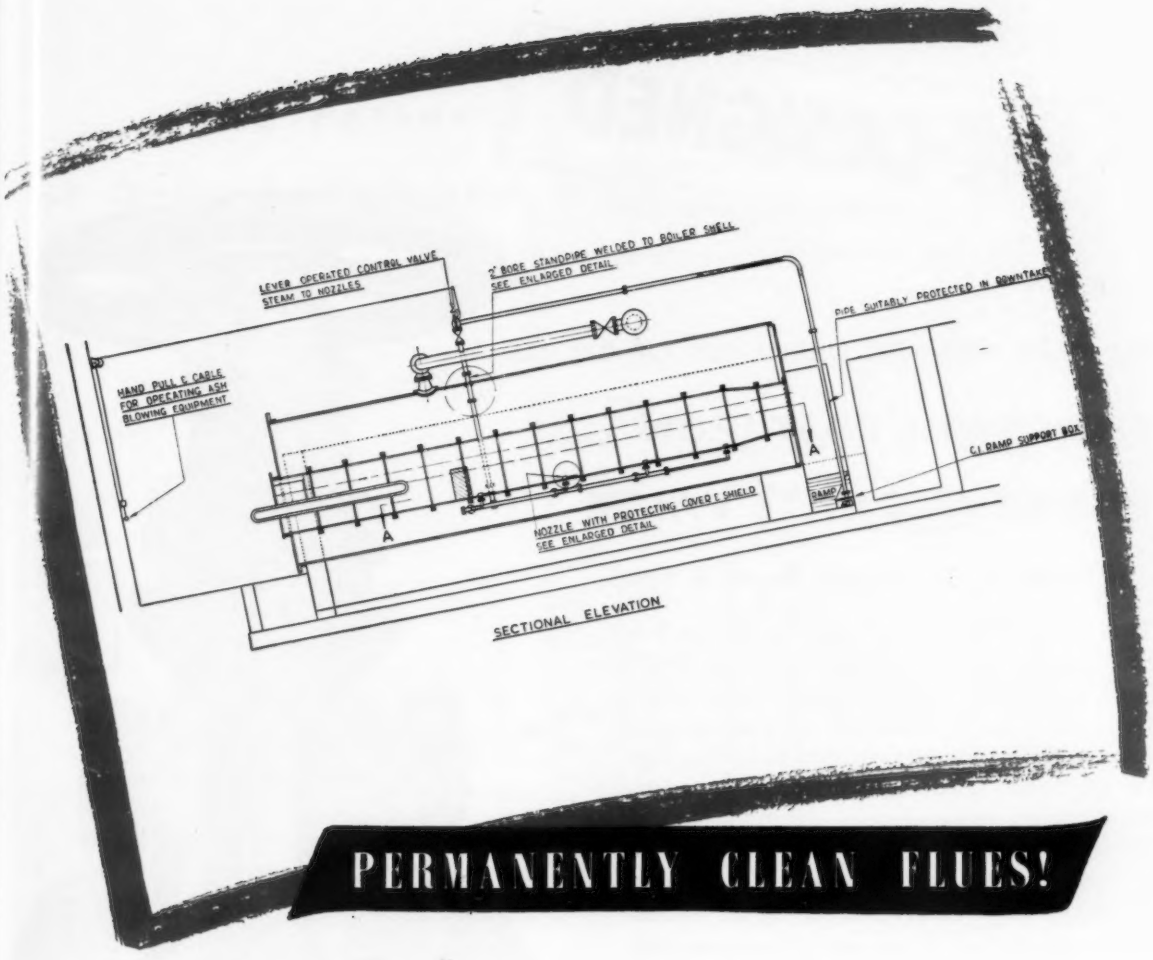
The Vulcan's plinth drawer is really useful for getting pans, shelves and utensils out of the way.



Embossed shelf runners make "gates" unnecessary. An occasional wipe with a damp cloth keeps this oven spotless.

Vitreous enamelled hot-plate sections carry the spillage pans, which prevent contamination of the burners. Parts lift off easily for cleaning.

***Point out these Vulcan advantages* YOUR SALES WILL BENEFIT!**


LEVER OPERATED CONTROL VALVE STEAM TO NOZZLES
2" BORE STANDPIPE WELDED TO BOILER SHELL SEE ENLARGED DETAIL
PIPE SUITABLY PROTECTED IN DOWNTAKE
HAND PULL & CABLE FOR OPERATING ASH BLOWING EQUIPMENT
CI RAMP SUPPORT BOX
NOZZLE WITH PROTECTING COVER & SHIELD SEE ENLARGED DETAIL
SECTIONAL ELEVATION

PERMANENTLY CLEAN FLUES!

— *and no* 'Shut-downs' *for cleaning*

If deposits of ash are allowed to accumulate beyond the furnace Bridge, the heat transmission through the furnace tubes is greatly reduced. Saving in fuel to the extent of 5% to 6% can be maintained year after year if your Boilers are fitted with "Bolton-Gray" Patent Ash Blowing Equipment.

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If you operate a Lancashire Boiler you cannot afford to be without BOLTON-GRAY Ash-Blowing Equipment.

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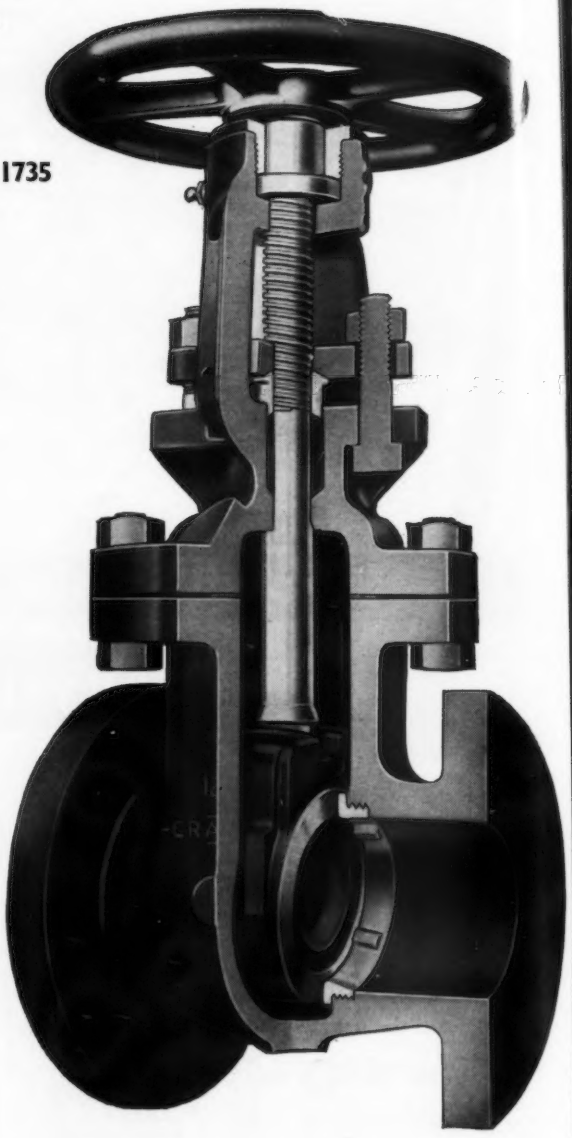
RE-DESIGNED

TO MEET THE REQUIREMENTS OF B.S. 1735

THE CRANE CAST IRON WEDGE DISC GATE VALVE

Gun Metal Trim—Outside Screw & Yoke



Crane are proud of their reputation for keeping their valve designs in line with the requirements of the British Standards Institution wherever possible. They are therefore especially pleased to announce that, by modifying the design of their outside screw and yoke Wedge Disc Gate Valve, it has been found possible to fulfil all the requirements of British Standard 1735.

Two entirely new features, recommended by this Standard, are also incorporated. The tee-head, disc-stem connection—which provides an improved, safe but flexible coupling between the disc and the stem—prevents any lateral strain in the stem. And all sizes within the 2″ to 12″ range are fitted with a $\frac{1}{8}$″ grease nipple for easy lubrication of yoke bushing. Full details of how these valves conform to British and American standards are listed below.

BRITISH AND AMERICAN STANDARDS

When flanged to B.S. 1575:1949 (which is identical to the American Standard A.S.A. B16.1:1948) these valves conform to Class 125 of B.S. 1735:1951. Face to face dimensions of all valves (except when sizes $3\frac{1}{2}$″ and 5″ are flanged to B.S. Table 'F') conform to the American Standard for face to face dimensions of Ferrous Flanged Valves, A.S.A. B16.10:1939, for 125 pound Cast Iron Wedge Gate Valves.

CRANE VALVES OF GUN METAL, CAST IRON AND CAST STEEL

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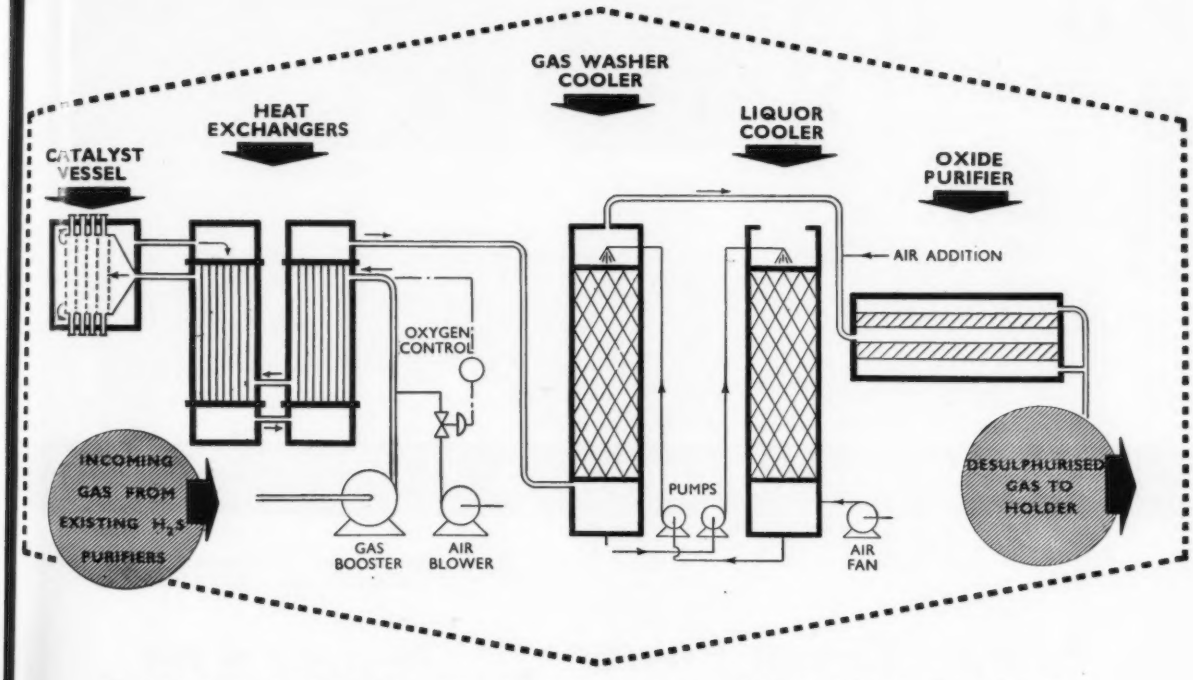
CRANE LTD., 45-51 LEMAN STREET, LONDON, E.1 Works: IPSWICH *Branches: Birmingham, Brentford, Bristol, Glasgow, Manche ter*

The removal of Organic Sulphur from Town Gas

WHESSOE LTD have been appointed licensees by the North Thames Gas Board for their catalytic process for the removal of organic sulphur compounds from town gas.



The advisability of reducing the organic sulphur content of town gas has long been stressed in Institution of Gas Engineers' Communications, the first in 1936, and in the Heyworth Report on the Gas Industry. Gas of low sulphur content would reduce corrosion of domestic water heating appliances, extend the field of use of flueless heaters, and remove difficulties met in special furnace applications, such as scaling in heat treatment, and bloom in glass finishing.

The North Thames Gas Board's process has been developed from the pilot plant at Fulham, to the first works scale plant of capacity 1.5 million cu. ft./day at Harrow. This plant, which has operated since 1938, has demonstrated the success and reliability of the process, which will reduce the organic sulphur content of town gas to below the recommended limit of 10 grains/100 cu. ft. without recourse to benzole extraction, or to 3-5 grains/100 cu. ft. in conjunction with a benzole plant.

Organic sulphur compounds are oxidised at 380°C. by means of the Nickel Sub-sulphide catalyst. Heat loss is minimised by lagging and by heat exchange between outgoing and incoming gas and the small heat requirement is supplied by catalytic combustion of hydrogen and oxygen, the oxygen content being controlled at 0.8—1.0%

The gas is finally cooled and scrubbed free from oxides of sulphur, the alkaline scrubbing solution being cooled and recirculated. A catch purifier is required to remove traces of hydrogen sulphide.

The process is covered by B.P.489,398 and subsequent patents.

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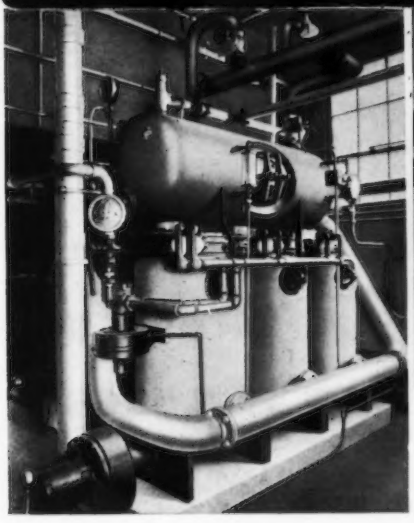
THE "VESTA" & "VERTEX" GAS FIRED BOILERS



Photographs by Courtesy of Wembley Stadium, Ltd.

WEMBLEY STADIUM

The Boiler Plant consists of TWO B.3 "VESTA" GAS FIRED BOILERS fitted with horizontal overhead steam drums, having a total capacity of 1,350,000 B.T.U.'s per hour.

The plant supplies low pressure steam for heating two plunge baths direct and, through calorifiers, hot water for wash basins, showers and baths in the New Dressing Rooms of the Main Sports Arena.

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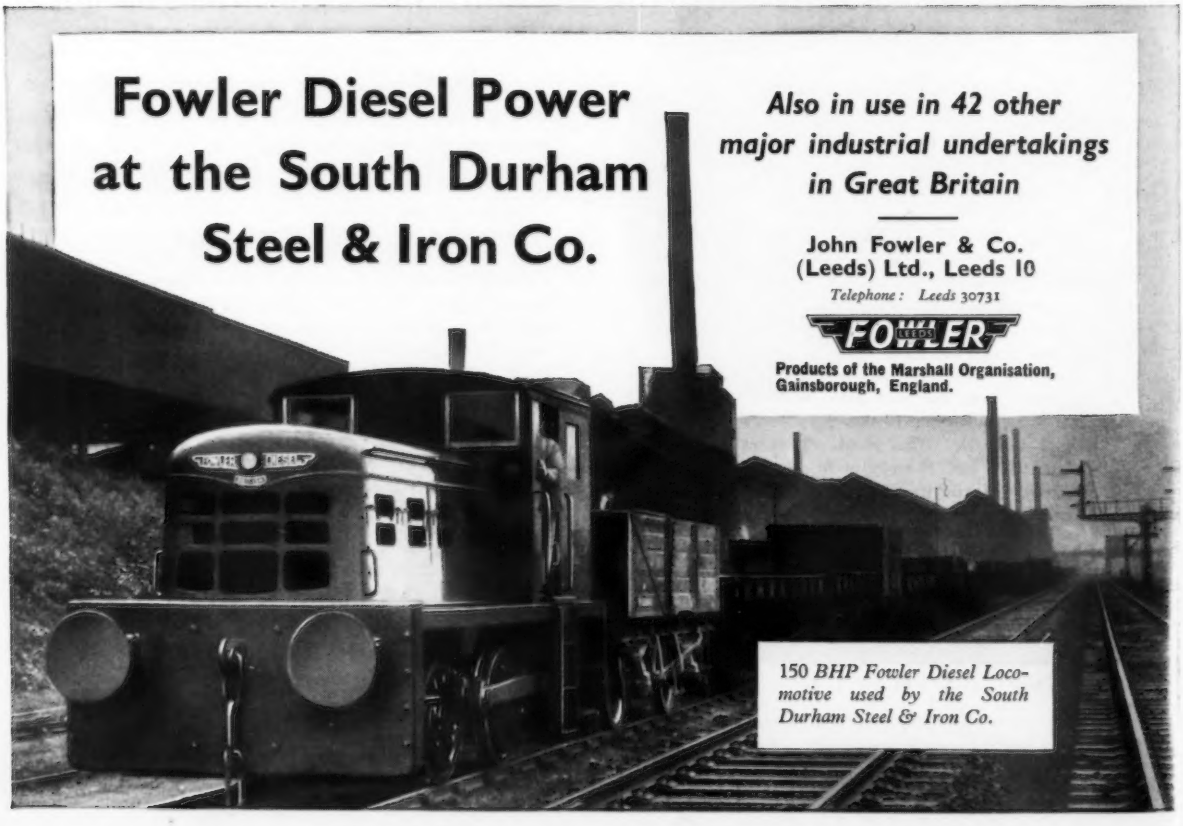
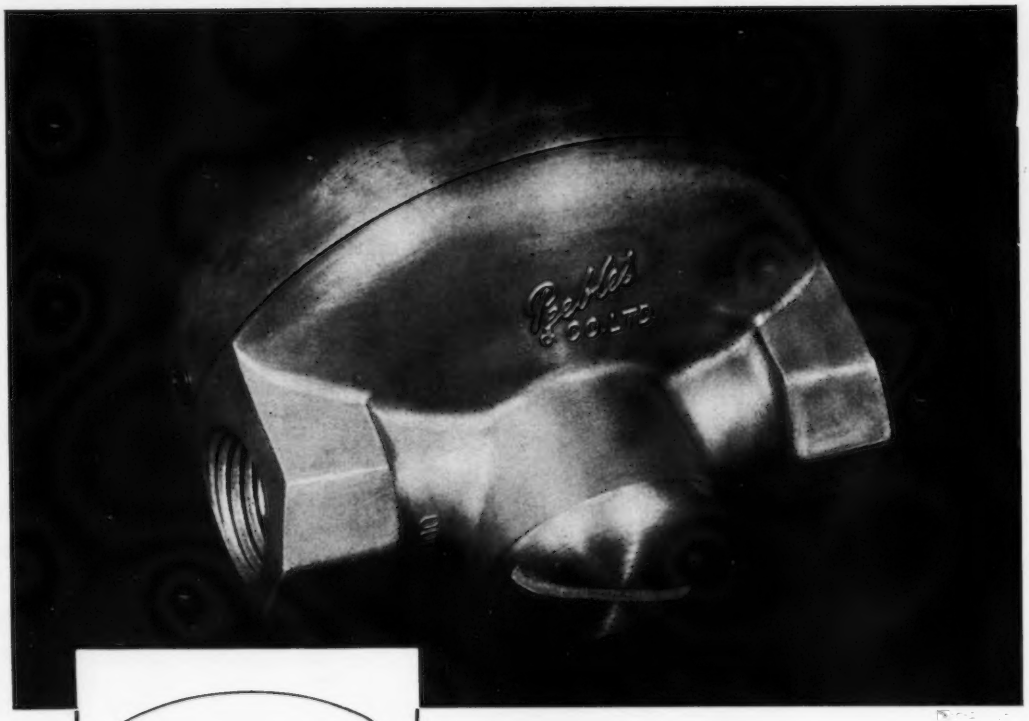
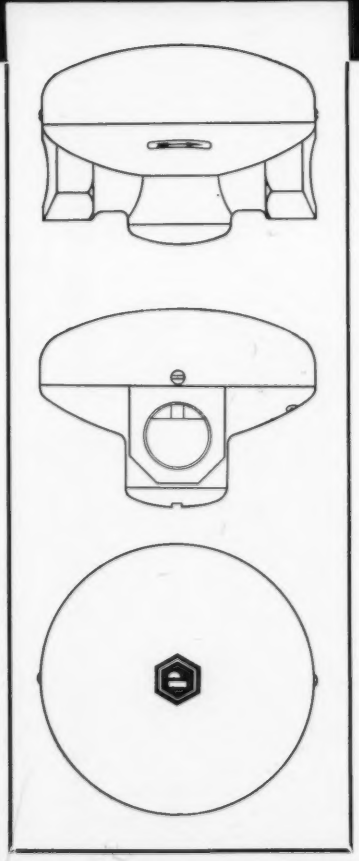


150 BHP Fowler Diesel Locomotive used by the South Durham Steel & Iron Co.





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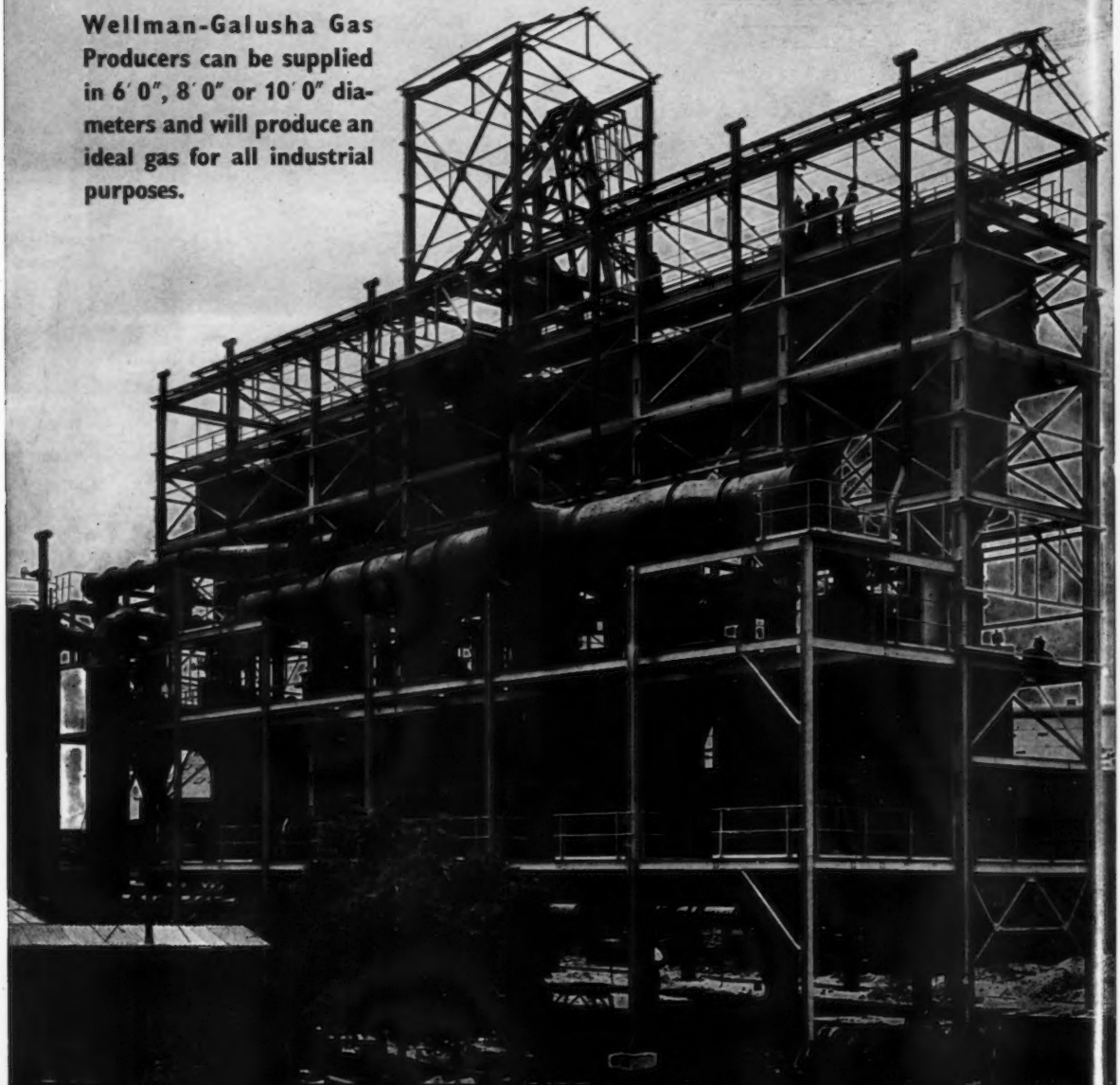

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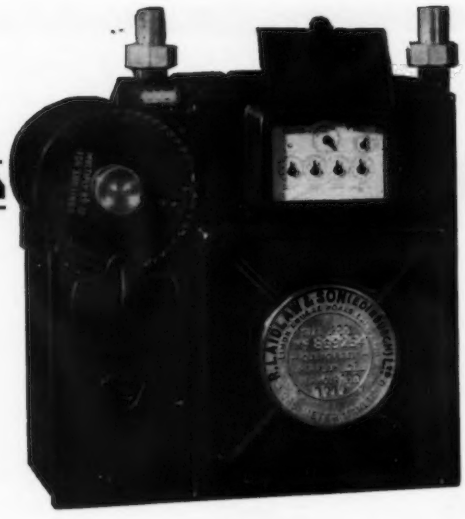

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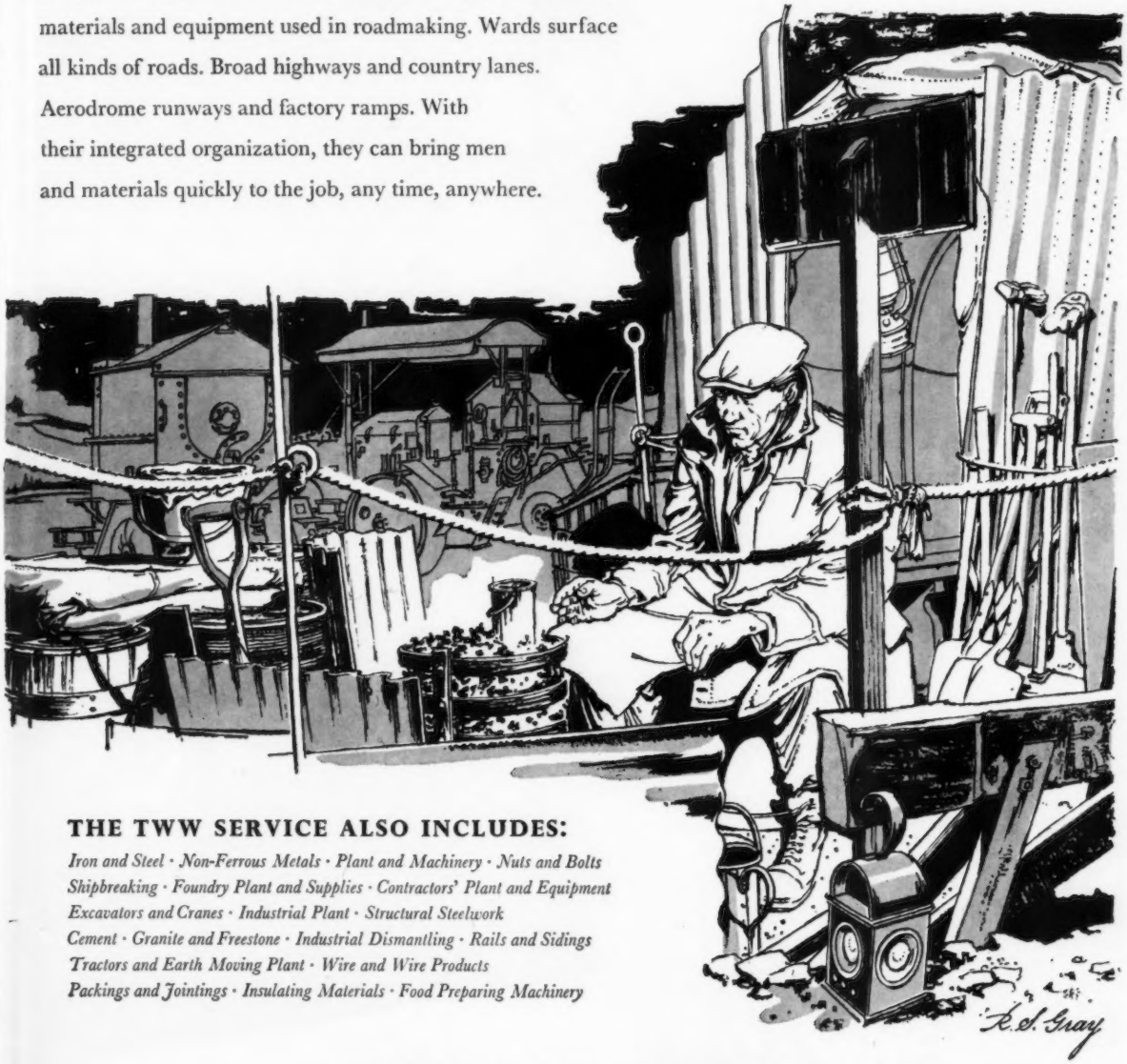

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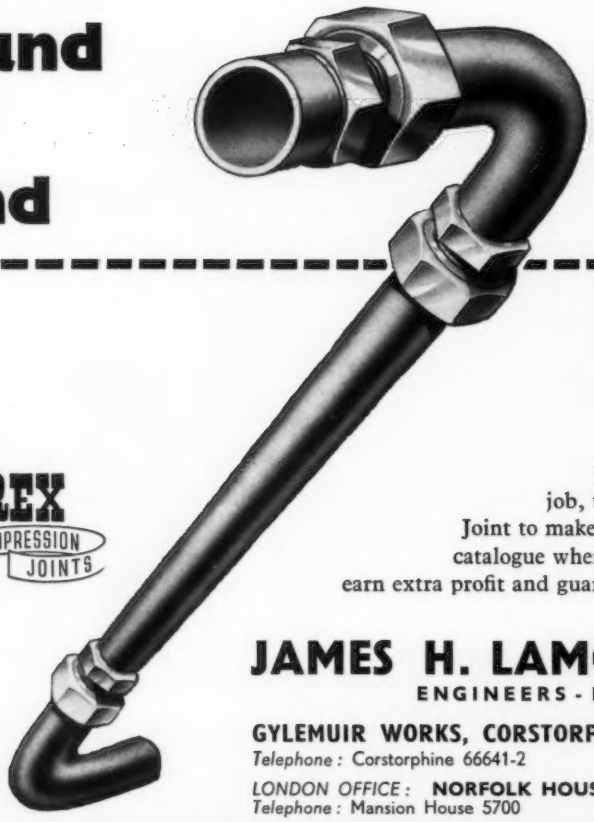
B

Round the Bend



or up the Straight

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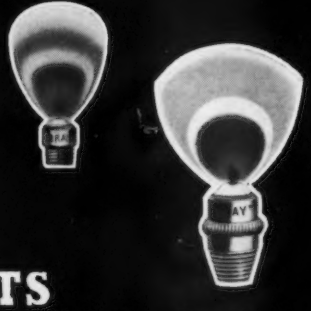

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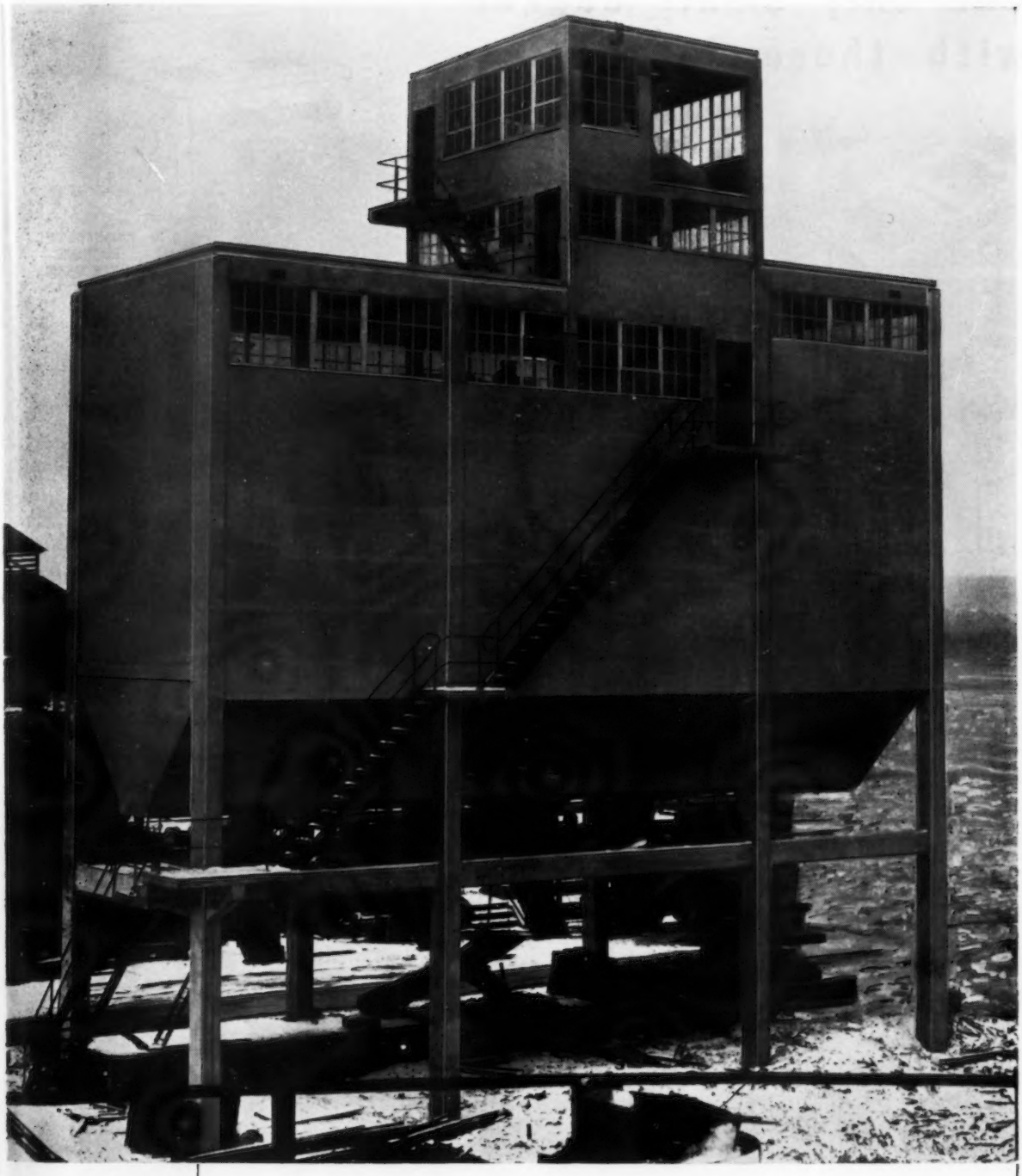

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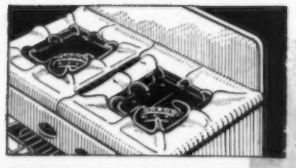

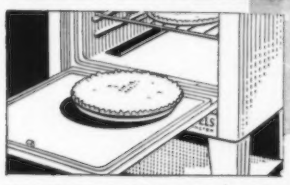

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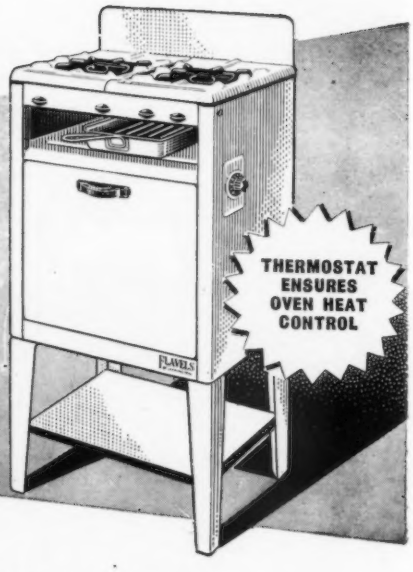

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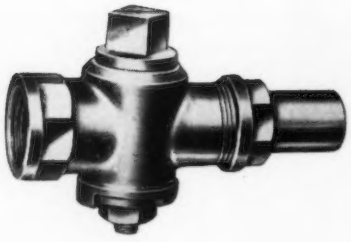

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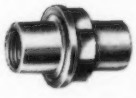

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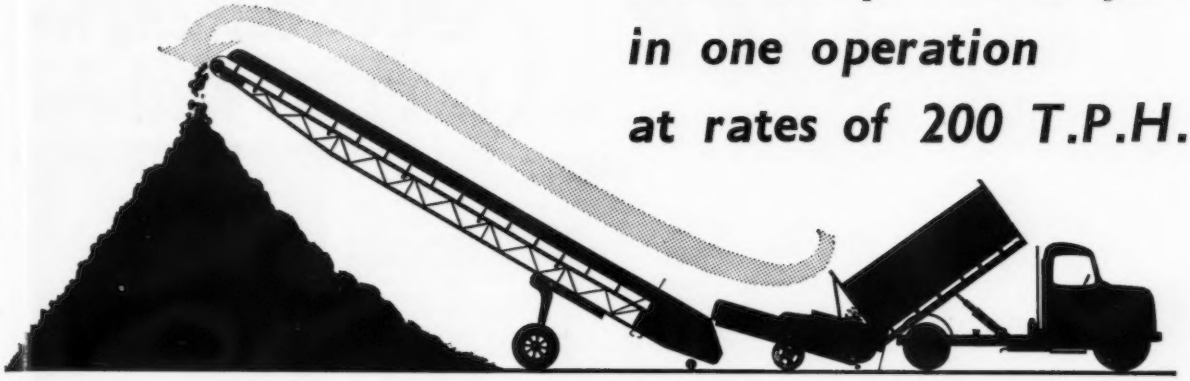

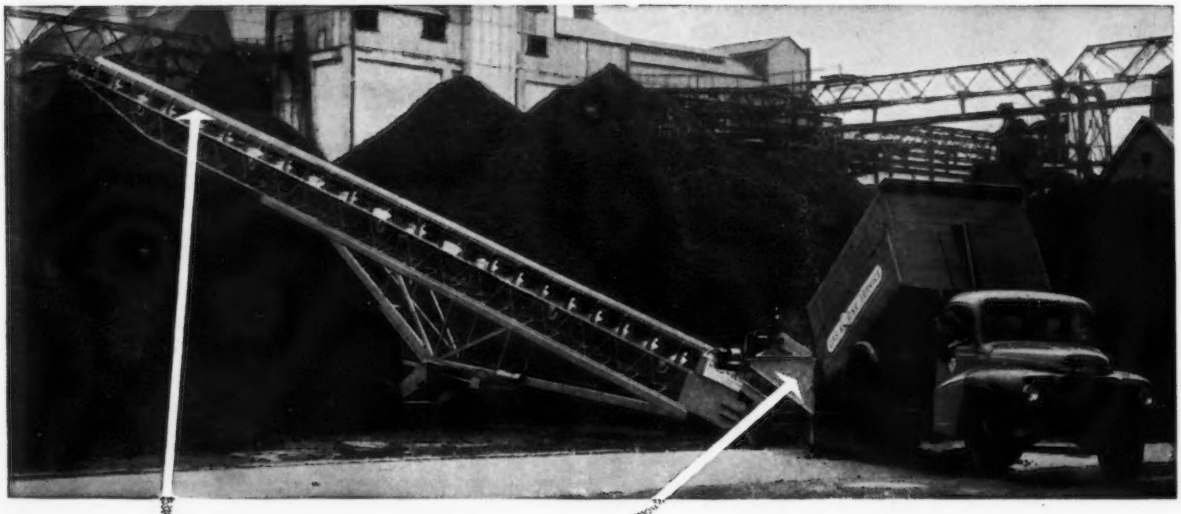

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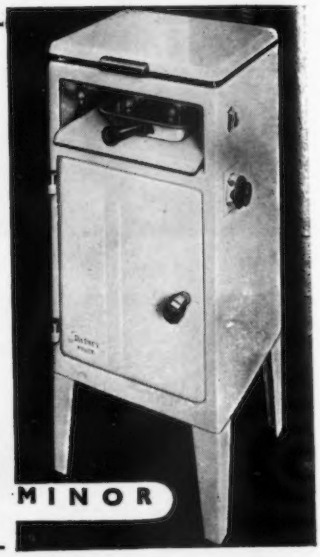

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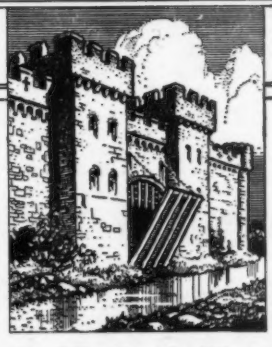

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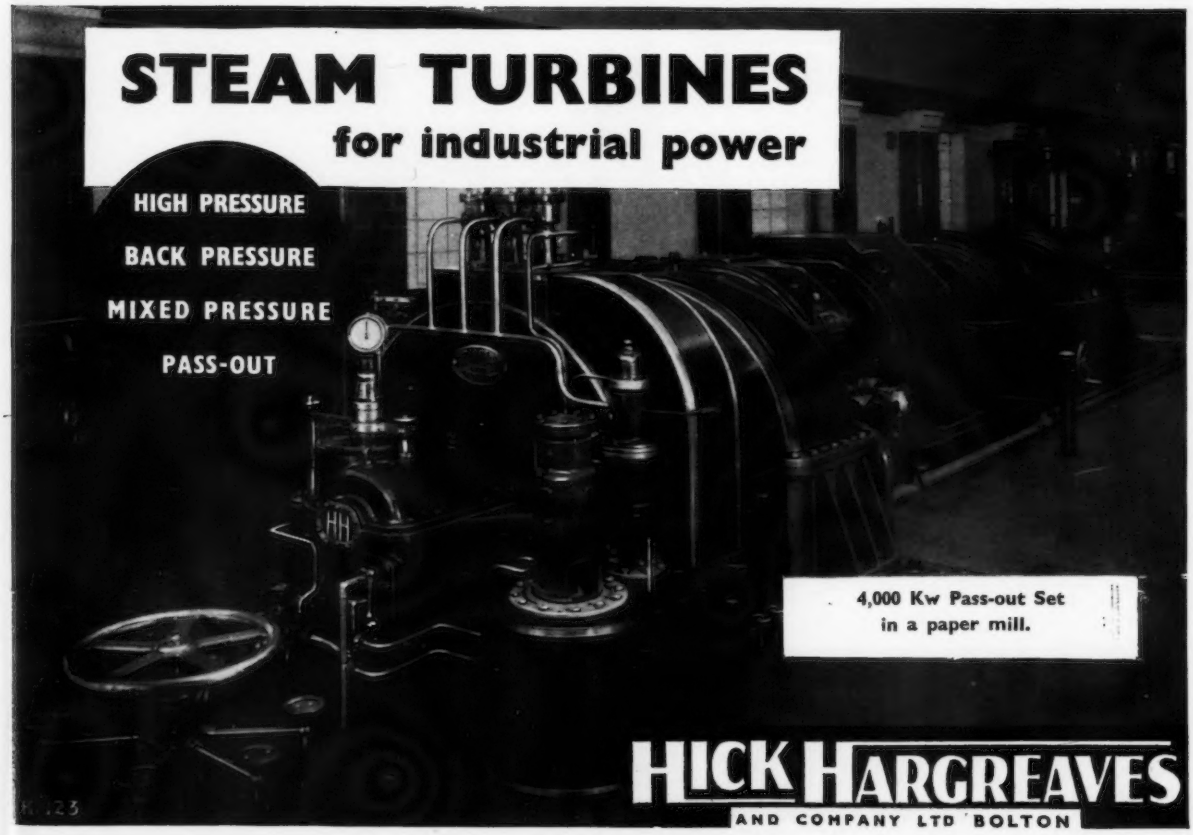

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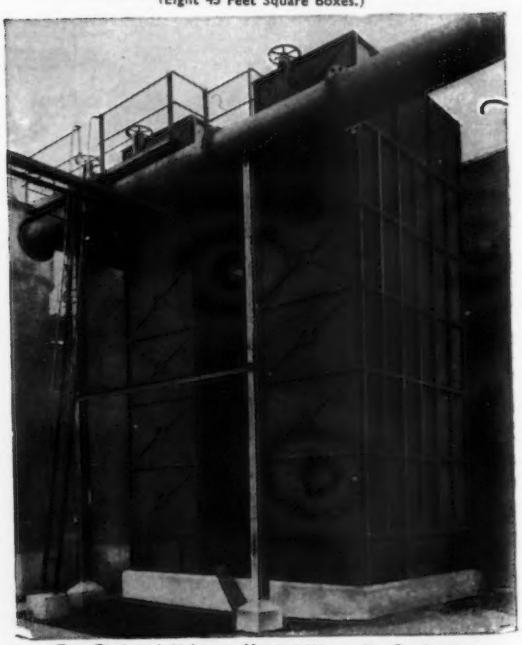

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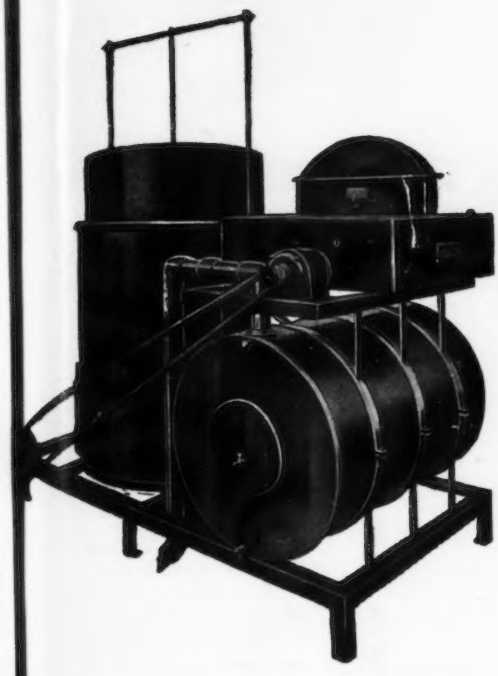

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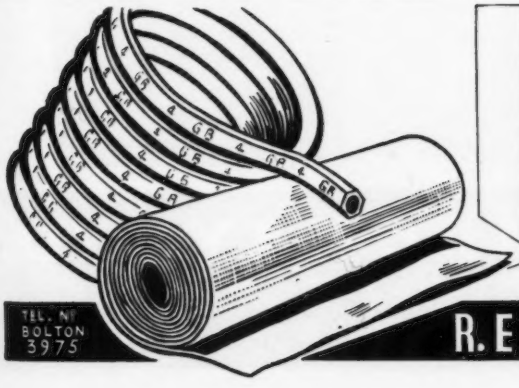

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INDEX TO 'JOURNAL' ADVERTISERS

A

	PAGE
C.E. Machinery, Ltd.	
Abbott, Parks & Co., Ltd.	
Acme Wringers, Ltd.	
Adagen Co., Ltd.	291
Adagraph Co., Ltd.	
Adder & Mackay, Ltd.	292
Aldridge & Ranken Ltd.	
Allan Taylor (Engineers), Ltd.	
Allen, John & Son (Oxford) Ltd.	272
Amal, Ltd.	
Ascot Gas Water Heaters, Ltd.	
Ascot Gas Water Heaters, Ltd. (F. A. Neat)	
Ashmore, Benson, Pease & Co.	facing p. 305
Ashworth & Parker, Ltd.	
Aspinall' (Paints), Ltd.	
Associate Lead Manufacturers, Ltd.	
Associate Lead Manufacturers, Ltd. (Rustodian)	
Atlas Preservative Co., Ltd.	
Audley Engineering Co., Ltd.	
Autocontrol Boilers, Ltd.	276
Automatic Telephone & Electric Co., Ltd.	
Automotive Products, Ltd.	
Averill, C. R., Ltd.	

B

Bale & Church, Ltd.	334
Balfour, Henry, & Co., Ltd.	
Bayley, Thos. (Great Bridge) Ltd.	
Baywaco Meters, Ltd.	
Beanham & Sons, Ltd.	
Bentley Co., Ltd.	
Blakeley Firth, Sons & Co., Ltd.	280
Bolton's Superheater & Pipe Works Ltd.	273
Booth, John, & Sons (Bolton), Ltd.	
Brett Colbran, Ltd.	
Bray, George, & Co., Ltd.	282
Bray, W. E., & Co., Ltd.	
British Flint & Cerium Manufacturers, Ltd.	
British Gas Purifying Materials Co.	
British Jeffrey-Diamond, Ltd.	
British Oxygen Co., Ltd.	
British Paints, Ltd.	
British Rototherm Co., Ltd.	
British Thermostat Co., Ltd.	
British Thomson Houston, Ltd.	
British Tyre & Rubber Co., Ltd.	
British Vacuum Cleaner & Engineering Co., Ltd.	
Broadbent, Thomas, & Sons, Ltd.	286
Broom & Wade, Ltd.	
Brown, J., & Co., Ltd.	
Bugden, Thos., & Co.	332

C

Cambridge Instrument Co., Ltd.	
Cannon (G. A.), Ltd.	
Cascade Water Coolers, Ltd.	
Cathodic Corrosion Control, Ltd.	
Cementation Co., Ltd.	331
Cineme-Television, Ltd.	
Clapham Bros., Ltd.	290
Clayton, Son & Co., Ltd.	
Clifford Engineering Co., Ltd.	
Cochrane (Middlesbro') Foundry, Ltd.	
Cohen, George, Sons & Co., Ltd.	
Concrete Proofing Co., Ltd.	288
Consolidated Pneumatic Tool Co., Ltd.	
Consett Iron Co., Ltd.	
Cort, Robt., & Son Ltd.	
Crane, Ltd.	274
Crone & Taylor, Ltd.	
Crosby & Co., Ltd.	
Crossley Bros.	
Crowley Russell, & Co., Ltd.	283
Curtis, A. L., & Co.	
Cutler, Samuel, & Sons, Ltd.	

D

Davenport Engineering Co., Ltd.	
Davey, Paxman & Co., Ltd.	
Deb Chemical Proprietaries Ltd.	
De la Rue, Thomas, & Co., Ltd. (Gas Group)	
Dempster, R. & J., Ltd.	
Dempster, Robert, & Sons, Ltd.	
Denison & Son, Ltd.	
Derbyshire Silica Firebrick Co., Ltd.	266
Diaphragm & General Leather Co., Ltd.	
Dick, R. & J., Ltd.	
Donkin (The Bryan) Co., Ltd.	Cover II
Douglas, Wm., & Sons, Ltd.	
Drakes, Ltd.	
Dresser Manufactures (England), Ltd.	289
Drew, H. B., Ltd.	
Drummond Patents Ltd.	
Dunlop Rubber Co., Ltd. (Gen. Rubber Goods Division)	

E

E.B. Refractory Cement Co., Ltd.	
Edgar, William, & Son, Ltd.	
Econtrol, Ltd.	
Electroflo Meters Co., Ltd.	
Electrolux, Ltd.	
Elliott Bros. (London), Ltd.	
Essard Ltd.	
Ether, Ltd.	
Evered & Co., Ltd.	
Ewart & Sons Ltd.	
Ewart Chainbelt Co., Ltd.	332

F

Fielden Electronics, Ltd.	
Fisher & Ludlow, Ltd.	
Fisher Governor Co., Ltd.	

	PAGE
Flavel, S., & Co., Ltd.	284
Fowler, John, & Co. (Leeds), Ltd.	276
Franki Compressed Pile Co., Ltd.	
Franklin Furnace Co., Ltd.	
Fry's Metal Foundries, Ltd.	279
Furmanite Engineering Co. (1929) Ltd.	291

G

Gas Purification & Chemical, Ltd.	334
General Descaling Co., Ltd.	
General Electric Co., Ltd.	
General Gas Appliances, Ltd.	
Gibbons Bros., Ltd.	
Glover, George, & Co., Ltd.	
Glover, Thomas, & Co., Ltd.	Cover I, 296
Godfrey, Sir George, & Partners (Industrial), Ltd.	
Goodall Clayton & Co., Ltd.	
Goodyear Mechanical Goods	
Grant, Lyon, & Co. Ltd.	336
Graphite Products, Ltd.	
Green & Boulding, Ltd.	
Gunite Construction Co., Ltd.	

H

Hamilton, A. H., & Co., Ltd.	288
Hardman & Holden, Ltd.	271
Harris & Pearson, Ltd.	
Harrisons (London), Ltd.	
Hattersley & Davidson	
Hayward, E. & Co. (Fabrications) Ltd.	332
Hick Hargreaves & Co., Ltd.	289
Hillmor, Ltd.	
Hills (West Bromwich), Ltd.	
Holman, Michell & Co., Ltd.	
Holmes, W. C., & Co., Ltd.	335
Honeywell Brown, Ltd.	
Hopkinsons, Ltd.	
Horseley Bridge & Thomas Piggott, Ltd.	
Horstmann Gear Co., Ltd.	
Howden, James, & Co., Ltd.	
Humphreys & Glasgow, Ltd.	294

I

Ideal Boilers & Radiators, Ltd.	
I.C.I. Ltd. (Fyffes Fittings)	
I.C.I., Ltd. (Metals Division	
Inertol, Ltd.	Cover II
Ingham, John, & Sons, Ltd.	

J

Jeavons, E. E., & Co., Ltd.	
Jeavons Engineering Co.	268
Jenkins, W. J., & Co., Ltd.	
Johnson, C. H. (Machinery), Ltd.	287

K

Keay, E. C. & J., Ltd.	
Keelavite Rotary Pumps & Motors Ltd.	
Keith Blackman, Ltd.	336
Kent, Geo., Ltd.	
Kings Patent Agency, Ltd.	334
King, Walter, Ltd.	332, 333, 334
Kirk & Co. (Tubes), Ltd.	
Kirkham Hulett & Chandler, Ltd.	

L

LaFarge Aluminous Cement Co., Ltd.	
Laidlaw, R., & Son (Edin.), Ltd.	280
Lamont, James H., & Co., Ltd.	282
Lancashire Dynamo & Crypto, Ltd.	
Le Bas Tube Co., Ltd.	
Leeds Fireclay, Co., Ltd.	
Lindsay, Henry, Ltd.	
Lionweld, Ltd.	
Lind, Peter, Ltd.	

M

Macpherson, Donald, & Co. Ltd.	
Magnetic Valve Co., Ltd.	
Main, R. & A., Ltd.	318, 319
Mapel Metal & Pipeline Endurance, Ltd.	
Matterson, Ltd.	
Meltham Silica Fire Brick Co., Ltd.	
Meters, Ltd.	
Metropolitan Leather Co., Ltd.	
Metropolitan Vickers Electrical Co., Ltd.	
Midland Iron & Hardware Co. (Cradley Heath), Ltd.	
Milnes Meters, Ltd.	284
Mint, Birmingham, Ltd.	
Mitchell Engineering, Ltd.	
Mitchell, H., & Co.	
Monitor Engineering & Oil Appliances, Ltd.	
Monk, A., & Co., Ltd.	

N

National Benzole Co., Ltd.	
National Cash Register Co., Ltd.	295
National Enamels, Ltd.	
Newton Chambers & Co., Ltd.	
Norwest Construction Co., Ltd.	265
Nu-Swift, Ltd.	334

O

Oxley Engineering Co., Ltd.	

P

Parkinson & Cowan (Gas Meters), Ltd.	296
Parkinson Stove Co., Ltd.	314
Pass, E., & Co., Ltd.	
Peebles & Co., Ltd.	277
Peri Controls, Ltd.	
Power-Gas Corporation, Ltd.	facing p. 305
Press, William, & Son, Ltd.	
Pulsometer Engineering Co., Ltd.	

R

	PAGE
Radiant Heating, Ltd	
Radiation, Ltd.	312, 313
Rawlplug Co., Ltd.	
Reavell & Co., Ltd.	331
Ride & Bell, Ltd.	
Riley, A. J., & Son, Ltd.	
Roberts, R. E., & Sons, Ltd.	291
Robinson, J. H., & Co. (Liverpool), Ltd.	
Rook Bros., Ltd.	
Royston, Geo., & Sons, Ltd.	
Rozalex Ltd.	
Russell, R., & Sons, Ltd.	288

S

Salter, T. E., Ltd.	
Sankey-Sheldon Ltd.	
Senior Economisers, Ltd.	
Shaw & McInnes Ltd.	268
Siebe Gorman & Co., Ltd.	
Siemens-Schuckert (Great Britain), Ltd.	
Sigma Instrument Co., Ltd.	
Simon-Carves, Ltd.	
Simon, Richard, & Sons, Ltd.	
Sisson, W., & Co., Ltd.	
Smith Meters, Ltd.	
Smith, Thos., & Sons (Rodley), Ltd.	
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Stein, John G., & Co., Ltd.	
Stelcon (Industrial Floors) Ltd.	
Stewart & Gray, Ltd.	332
Stewarts & Lloyds, Ltd.	
Stoves, Ltd.	267
Strachan & Henshaw, Ltd.	
Stringer Bros.	
Sugg, Wm., & Co., Ltd.	270
Summerson, Thos., & Sons, Ltd.	
Supra Chemicals & Paints, Ltd.	
Sutcliffe, R., Ltd.	
Sutcliffe Speakman & Co., Ltd.	
Sutherland, A. G., Ltd.	

T

T & T Works, Ltd.	
Tangyes, Ltd.	
Taylor Bros.	286
Thermal Syndicate, Ltd.	
Thompson, Edward, Ltd.	
Thompson, John, Conveyor Co.	
Thorp, Thomas, & Co., Ltd.	
Tully Engineering Co., Ltd.	
Turners Asbestos Cement Co., Ltd.	

U

Underpressure Engineering Co., Ltd.	
United Kingdom Construction & Engineering Co., Ltd.	
Unit Superheater & Pipe Co., Ltd.	

V

Vaughan, Edgar & Co., Ltd.	
Visco Engineering Co., Ltd.	
Vulcan Stove Co., Ltd.	272

W

Wade Couplings, Ltd.	331
Wakelin, F. H., Ltd.	
Walker, C. & W., Ltd.	
Walker, Crosweller & Co., Ltd.	
Walker, Wm., & Sons (Hanley), Ltd.	
Waller, George, & Sons, Ltd.	
Walter King, Ltd.	332, 333, 334
Ward, Thos. W., Ltd.	281
Watson, Robt., & Co. (Constructional Engineers) Ltd	
Weir, G. & J., Ltd.	
Wellington Tube Works, Ltd.	Cover IV
Wellman Smith Owen Engineering Corpn., Ltd.	278
West's Gas Improvement Co., Ltd.	Cover III
West's Gas Improvement Co., Ltd. (C.O.L.) Division)	
West's Piling & Construction Co.	
Westwood & Wrights, Ltd.	
Whessoe, Ltd.	275
Whitley Moran & Co., Ltd.	
Wilkes, A. H., & Co., Ltd.	
Willey & Co., Ltd.	269
Williams, John E., Ltd.	
Williamson Cliff, Ltd.	
Wilson, George, Gas Meters, Ltd.	
Winn & Coales, Ltd.	285
Woodall-Duckham Construction Co., Ltd.	facing p. 304
Wood, Hugh, & Co., Ltd.	
Wormald Patent Locks Co., Ltd.	

Y

Yorkshire Copper Works, Ltd.	

Appointments Vacant	334
Appointment Wanted	
Contracts Open	
Educational	
Fellowship	
Miscellaneous	
Patents	334
Plant For Sale	
Publications	

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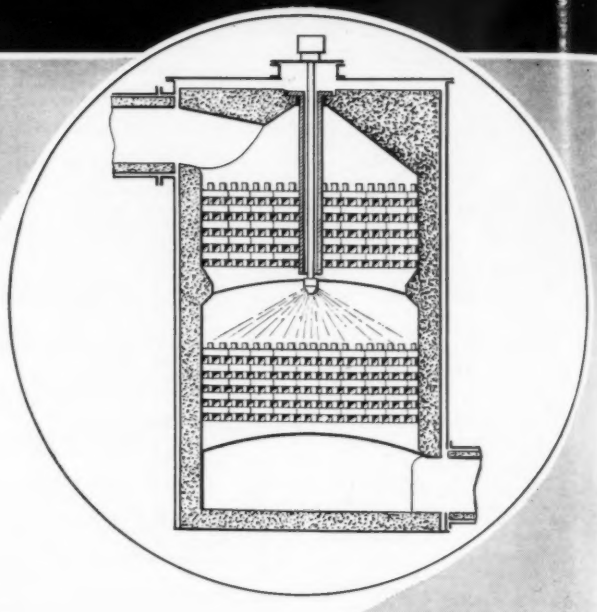

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Gas Journal

VOL. 282 NO. 4796 MAY 4, 1955

107TH YEAR

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CONTENTS

EDITORIAL COMMENT

Further Thoughts on Coke .. 297
Respect for Grandfather .. 298
Natural Gas Search .. 298
Rising Rates .. 298
Pewter of Today .. 299
Mining Must Follow the Coal .. 299
The Millionth Appliance .. 299
Institute of Fuel Luncheon .. 299

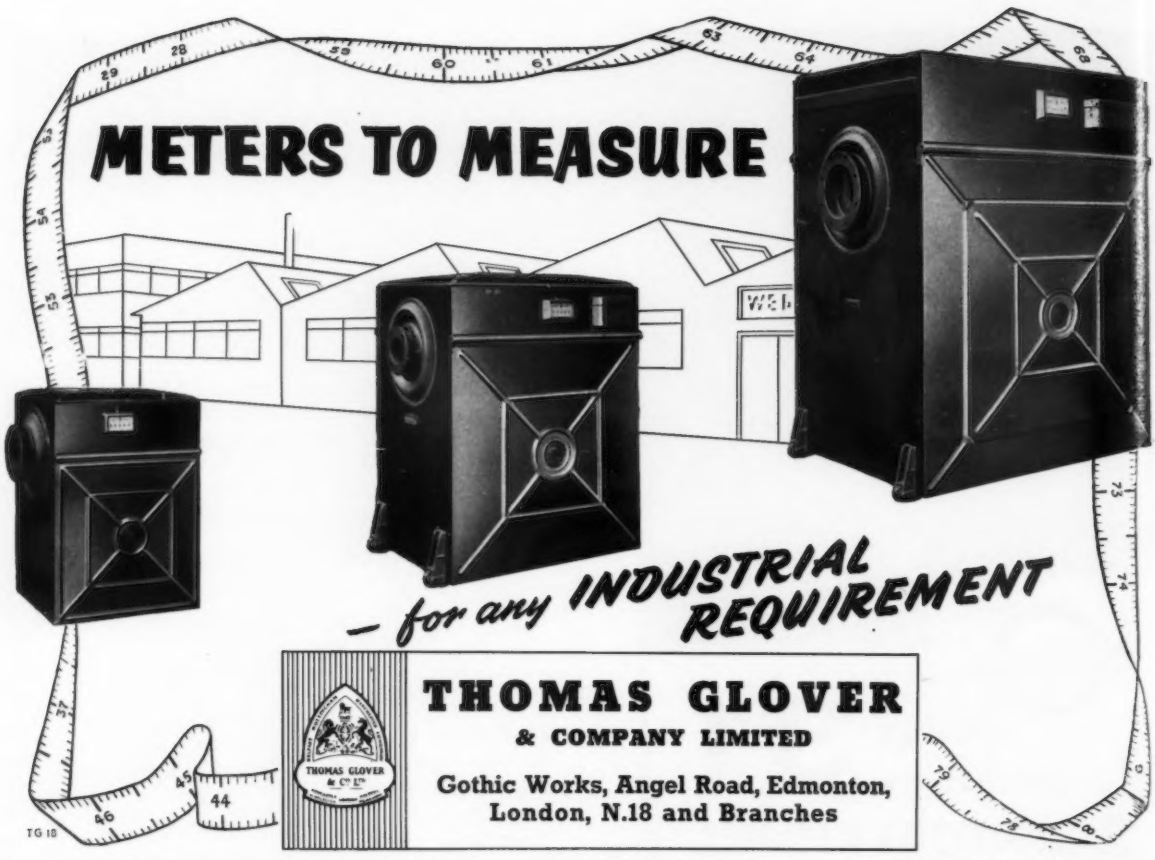
TECHNICAL RECORD

Smoke Abatement in Practice. By G. E. Foxwell .. 301
The First Six Years in Scotland. By John Ford .. 304
New Plant at Bude. By Robert Miller .. 307
Natural Gas Search in Italy. By H. Johnston .. 311

NEWS OF CURRENT EVENTS

Obituary .. 300
Personal .. 300
Diary .. 300
Calendar and Directory Alterations .. 300
Midland Section Annual Meeting .. 315
Scotland Welcomes Spring .. 316
Edinburgh Sales Centre .. 316
East Midlands Gas Board's Sixth Conference at Skegness .. 317
Scottish Association Spring Meeting at Peebles .. 323
Eastern Road Tar Conference .. 325
Company News .. 326
Mr. Therm at Home .. 326
Coke Price Scheme .. 326
Yorkshire High Pressure Main .. 327
Building Exhibition .. 327
Labour Saving Fires .. 327
New Showroom at Llandudno .. 327
News in Brief .. 328
Scottish Association of Gas Managers Golf Circle .. 328
Trade News .. 329

PUBLISHERS' NOTICE, SEE PAGE 261, APRIL 27, 1955



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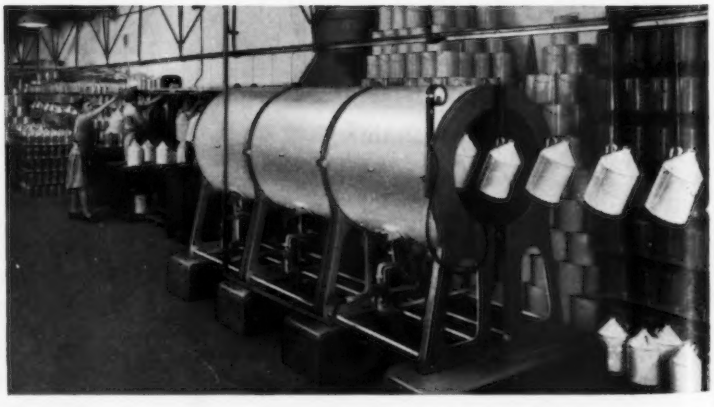

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Gas Journal

VOLUME 282. No. 4796. MAY 4, 1955. 107th YEAR

Further Thoughts on Coke

IN the paper which he presented to a joint meeting of the Institute of Fuel with N.I.F.E.S. and the National Smoke Abatement Society in Glasgow on April 1, Dr. G. E. Foxwell summarized again the findings of the Beaver Committee and amplified to some extent what he himself contributed to it in his able study of the provision of smokeless fuels (see p. 301 of this issue). There is one passage in the present paper which, although largely merely repeating what he and others have said often before, is particularly worth noting and studying once again. It refers to the domestic problem which looms so large in gas industry policy. There is in this passage a slightly different emphasis from that in the Beaver Report. We shall not agree with some of it. For instance, is it true '*most* of the coke coming out of the gas and coke works would not burn satisfactorily on even a modern coke-burning open fire'? We suggest that this is, to say the least, an exaggeration; the word 'not' could well be eliminated at any rate in relation to the gas-works. It is surely well within the capability of the gas industry to ensure that *all* the coke it produces shall burn satisfactorily in suitable domestic appliances.

Indeed it should be made known that the gas industry is taking this problem very seriously, together with the allied problem of modifying, as far as this can be done without serious loss of thermal efficiency, its gas-making processes to increase the amount of coke available. We venture the opinion that no such modification should be made as would increase appreciably the cost of gas per therm. We are sure that Dr. Foxwell understands as well as we do the fundamental principle of gas and coke prices—that the cost of gas is governed almost entirely by the cost of coal less what can be got for coke in competition with other fuels. The gas industry cannot be expected for a moment to reduce its selling price of coke below this figure. Rather it must turn its attention to removing the causes of that 'local opinion'—is it not prejudice?—which regards coke as already too high in price and as an unpopular fuel. Has not Dr. Foxwell himself assumed that 16 cwt. of coke burnt in a modern appliance is equivalent to one ton of house coal burnt in the out-of-date appliances now in common use? And is it not true that a properly prepared coke is more efficient—*i.e.*, more valuable, than coal, even when both are burnt in a modern open fire? Where then is the justification for a reduction in the price of coke? True, there remains the other formidable problem before the gas industry, that it could not make coke at all if the gas remained unsold. This problem seems to be capable of solution only if a certain balance can be maintained between consumptions of gas and coke. Roughly, we have somehow to persuade the consumer to use the two fuels in the proportion, 75 therms of gas to eight or 10 cwt. of coke, which can be a yearly average since coke can be stored in bulk against the winter load. Is this quite impossible?

There are some arguments in Dr. Foxwell's analysis which are not, we think, well established. For instance, the difficulties of coke supply from different types of carbonizing plant, particularly in times of maximum demand, would not be overcome by requiring all producers to work to a standard specification, even if that included 'burnability.' Such a specification, however carefully drawn up, could never get away from the basic fact, which Dr. Foxwell himself so clearly recognizes, that sizing, moisture and ash content, easily enough defined in a specification, have no effect on those properties which derive from the fundamental properties of the coal from which the coke is made. Finally, there is the question of the availability of carbonization coal. The scandal here is that, owing to lack of policy, some 45% of the coal of this class is wasted in simple combustion. Quoting Dr. Foxwell's Appendix: 'Significant tonnages of coking or gas coals are now used for purposes for which non-coking coal or fuel oil would be equally suitable.' And in the present paper he says: 'Many millions of tons of carbonizable coal are now burnt under boilers.'

If we are to get on with this campaign quickly, we must begin with exploiting and developing the plant and processes already to hand. Movement must be made along the several lines simultaneously. The new appliances must be popularized and installed, the supply of coke must be organized, particularly supplies of accurately sized, consistent-quality coke must be assured. Plants must be extended as demand is seen to grow. No reliance can be placed on false hopes of reducing the price of coke. In the long run that and its main properties will inevitably be deter-

mined by the cost and properties of the coal from which it is made, coupled with the inexorable condition that coke cannot be provided in increasing quantity unless the consumption of gas is simultaneously expanded.

Respect for Grandfather

IN all ages youth has been critical of the older generation (and, let it be admitted, old age has not always seen eye to eye with youth) but as Sir Oliver Lyle, Joint Managing Director of Tate & Lyle, Ltd., said recently in Newcastle, grandfather was not always wrong. He was addressing the closing session of a refresher course for senior works engineers organized by the Incorporated Plant Engineers on the subject of 'The Plant Engineer and Management' and he urged that the plant engineer should try to look at established traditional methods and plant with an unbiased eye. 'Tradition,' he said, 'should be criticized open-mindedly with respect—grandfather was not necessarily always wrong.' The plant engineer cannot hope to become a manager or a managing director unless or until he has made a success of his relations with his management; Sir Oliver therefore concentrated attention on that aspect.

The first job of a plant engineer was to keep his plant running. On that count his success would be measured by the lack of breakdowns. Sir Oliver's advice was that a record of breakdowns should be kept and that estimates should be made of the *real* cost of breakdowns. One of the most important things to be examined and decided was whether standby plant should be installed. Every factory should solve its own standby problem in the light of its real cost of breakdowns. The speaker gave an example. The second task of the plant engineer was to produce ideas for extensions, alterations, and improvements, and to 'put across' those ideas. 'The selling of ideas often needs much skill, is very important and often is very difficult and frustrating.' Being a managing director and therefore at 'the receiving end,' Sir Oliver was in a position to give good advice on how to present ideas to management. He stressed the need for the plant engineer to be lucid in both talking and writing. In putting forward a scheme, the plant engineer should be in a position to say what it would save, what it would cost, and when it could be working. He should take account of the 'error of optimism' and stick to the 'grim truth.' Where there were a number of schemes, the most profitable should be done first. There should be a close association with process or production colleagues so that a good decision could be made on priorities of competing schemes. The first good results of experiments are seldom maintained. Reasons were given and the speaker said that all experiments, whatever their first result, should be repeated often enough to allow errors to average; every care should be taken to control experiments closely and to measure results accurately. Second thoughts on a problem were usually the best, however orthodox or classical or elegant the first solution might be, and often revealed the unexpected.

Another speaker at the same session was Sir Claude Gibb, Chairman and Managing Director of C. A. Parsons & Co., Ltd., who, endorsing Sir Oliver Lyle's views, said the older he had become the more he had realized what a good engineer grandfather was, but that had not deterred them from setting up a production research team comprising roughly half graduate engineers and half skilled craftsmen to look at every operation, every machine tool, every component going through the factory, starting off on the basis of ascertaining whether this was the only way in which a product could be made; was this the only material that could be used; and was this the only machine tool on which it could be machined. One of the problems always in his mind was the fact that the younger people on whom the future would depend had not in their working lifetime had to *sell* anything, but we had now reached an era in which we had to sell, and we had to take off our coats to do so. Sir Claude was not the least bit gloomy about the future of British industry; in fact he said he was so far from gloomy that his Company was at present in the final stages of considering spending another £2¼ mill. at its Heaton Works.

NATURAL GAS SEARCH

FIVE prospecting licences were granted by the Minister of Fuel and Power recently to the D'Arcy Exploration Company, Ltd., which is undertaking on behalf of the Gas Council a five-year search for natural gas throughout Britain, in respect of prospecting operations in areas in Lancashire, Cheshire, Shropshire, Flint, and Denbigh. Survey work in the Cheshire Basin will start in the near future. The work will consist in the first place of a gravity survey, which measures the minute changes of gravity in the earth's surface and thereby assists in the location of underground structures in which gas may be present. This work is expected to continue for three or four months. When the results have been studied by the technicians of the D'Arcy Exploration Company, it may be necessary to carry out further detailed survey work. Although the surveys assist the geologists in determining the most likely places for the accumulation of gas, it is only by drilling a test well that the presence or otherwise of gas can be determined.

RISING RATES

FROM returns obtained from 83 county borough councils in England and Wales the Institute of Municipal Treasurers and Accountants has compiled a table of rates for the municipal year 1955-56 which shows that ratepayers will be called upon to pay an average of 23s. 4d. in the pound, compared with 23s. 1½d. in the year just ended. In the last pre-war period (the year ended March 31, 1940) the average was 14s. 6d., from which it rose to 20s. 1½d. in 1952-53, and 21s. in 1953-54. Rates in individual county boroughs in 1939-40 ranged from 7s. 10d. to 30s. 6d. in the pound, and although the current highest rate is only a shilling above the pre-war top the lowest has risen to 15s. In 1939-40 Merthyr Tydfil had the unenviable distinction of heading the list at 30s. 6d.; it is still at the top, although its rates have been increased by only a shilling, whereas Burton-on-Trent's rate has doubled from 13s. 6d. to 27s. in the same period. Before the war Bournemouth had the lowest rate at 7s. 10d.; today it is only 2d. above the lowest, at 15s. 2d. Eastbourne enjoys a rate of 15s., a figure that has remained unchanged for the past four years, against 9s. immediately before the war. For the current year eight county boroughs have reduced their rates, Sheffield leading the way with a cut of 4s. from 24s. to 20s., the others ranging from 2d. to 1s.;

on the other side of the account, 30 have raised their demands by amounts varying from 2d. to 2s. 2d.

Before the war five county boroughs had rates of under 1s., 37 from 10s. to 15s., 38 from 15s. to 20s., two between 2s. and 25s., and one over 25s. Now there are nine below 20s., 43 between 20s. and 25s., and 31 over 25s. Further information is now being collected by the Institute from county borough and metropolitan borough councils and from representative non-borough urban district, and rural district councils. A detailed analysis of these returns, showing the principal purposes for which the rates are levied, will be published later by the Institute at 7s. 6d.

PEWTER OF TODAY

THE Tin Research Institute announces in the April issue of its quarterly journal, *Tin and Its Uses*, that it is organizing an international exhibition of contemporary pewter, under the title of 'Pewter of Today' to take place in London in June. The appreciation of pewter has waned under the immense hindrances of the war years when the use of tin for this purpose was totally forbidden in all warring countries. These restrictions continued everywhere for several years after the war and it is only in the last two years in the United States that the possibility of manufacture has been restored. Before the war there was a widespread and lively appreciation of pewter and there was beginning to be some revival of interest among amateurs of metalwork. The forthcoming exhibition will make it plain that pewter is again available to all who wish to work in this traditional material. Exhibits are being lent by firms in most of the pewter-producing countries, and after the close of the London exhibition on June 30 the whole collection will be available for a series of showings which are being planned to take place in European cities for the remainder of 1955, and possibly a little longer. Early in 1956 it is intended to ship the collection to the United States and send it on tour to 10 principal cities before it enters Canada on its way back to London, where it will be dispersed.

In the same issue Dr. Frederick Lowenheim explains in a four-page article how it is possible to step up the production from stannate tin-plating baths by substituting the sodium salts by potassium salts. He also describes a patented tin-alloy anode that aids in faster plating. Chemical balance weights are now being plated with the new tin-nickel alloy electroplate; according to the article, the tin-nickel plating is preferable to gold-plating for this application. *Tin and its Uses*, No. 31, is obtainable free on request to the Tin Research Institute, Fraser Road, Greenford, Middlesex.

MINING MUST FOLLOW THE COAL

OPENING an exhibition at the Royal Scottish Museum in Edinburgh on April 13 to show industry, commerce, and public bodies something of the problems with which the National Coal Board are confronted in Scotland, and how they are being dealt with, Sir Hubert Houldsworth, Chairman of the Board, said that, by the success of its extracting operations, the coal-mining industry was inevitably destroying the capacity to produce. Unless something was done to replace that capacity by reconstruction, by new sinkings, and by mobility of labour, the production of coal must diminish. He said that they had little or no choice in the coal industry as to where to carry out production—'We must follow the coal.' If supplies became exhausted, and reserves were available elsewhere, the industry had to turn to that place. This raised two problems—the technical problem of producing to capacity where the coal was situated, and the human problem involving the mobility of labour.

THE MILLIONTH APPLIANCE

HAVING sold an average of something over 32,000 appliances per week for the past six years, the North Thames Gas Board at some time during the past fortnight sold its millionth appliance since vesting day, May 1, 1949. With sales going on more or less continuously at showrooms and service centres throughout the area it was impossible to pinpoint the actual transaction, but the Board advertised its intention to mark the event by inviting all who purchased appliances during the fortnight to enter a simple competition in which they had to place in order of merit nine reasons why they prefer gas. The winner of this competition will become entitled to the selected appliance free of charge, together with other domestic appliances worth £100. Apart from the possibility that some purchasers with pronounced gambling instincts may have been tempted to buy high-priced appliances beyond their normal spending capacities in the hope of getting them for nothing, there was no snag in the offer. The purchaser of a gas poker costing a few shillings stood the same chance of winning the £100 worth of appliances as the buyers of the most expensive cooker or refrigerator. Appliances eligible were clearly listed on the sales voucher; they were cookers, grillers, hot-plates, refrigerators, gas fires, radiators, portable heaters, water heaters, circulators, wash boilers, washing machines, drying cabinets, towel rails, all-fuel grates, conversion units for back boilers, rings, pokers, and irons.

INSTITUTE OF FUEL LUNCHEON

ON Thursday, April 28, the Institute of Fuel held its Annual Luncheon for 1955 at the Connaught Rooms in London. The President of the Institute, Dr. W. Idris Jones, C.B.E., who has almost completed his second year of office, was in the chair and, among the guests were Mr. C. M. Vignoles, O.B.E., Chairman, Petroleum Industry Advisory Committee and guest of honour, the Hon. L. W. Joynson-Hicks, M.P., Parliamentary Secretary, Ministry of Fuel and Power, the Rt. Hon. Lord Adrian, O.M., President of the Royal Society, Sir Ernest Smith, C.B.E., Dr. A. Parker, C.B.E., together with many other distinguished representatives of the Government, nationalised fuel industries, research bodies and kindred organizations.

During the course of the function, Dr. Idris Jones handed to Sir Ernest Smith the scroll recording his admission to Honorary Membership of the Institute, and to Dr. Parker, the Melchett Medal for 1955. After the President, the chief speaker was Mr. C. M. Vignoles, O.B.E., who as Managing Director of Shell-Mex and B.P., Ltd., not unnaturally dealt with the oil industry and its contribution to the fuel supplies of Britain. He said, 'In spite of the great efforts being made by the National Coal Board to repair the ravages of the past and open up new resources for the future (and in the presence of so distinguished a figure in the coal industry as Dr. Idris Jones it would be impertinent of me to dilate on these further) I am sure he will agree that coal has entered into a phase of relative, I repeat relative, decline and other forms of energy must increasingly enter upon the scene. In looking forward to the day in the foreseeable future when the Aladdin's lamp of atomic energy, as is becoming increasingly certain, will be rubbed to the incalculable benefit of mankind, it is none the less certain that oil too must play an increasing share, not only in the interim period of development but perhaps as a permanent partner of the old and the new. In terms of total world energy requirements, oil has increased its share since 1938 from 24% to 51% and, even though this includes the United States with its preponderant oil supply vis-a-vis coal, in the United Kingdom itself the share being provided by oil has risen to 15%'.

Obituary

HAROLD E. BLOOR

We record with regret the death of MR HAROLD EDGAR BLOOR, formerly Director and General Manager of the York Gas Company, which occurred at his home at Clifton, York, on Saturday at the age of 73. Mr. Bloor was one of the outstanding personalities of the gas industry in the first half of the century and took an active part in its national organizations, leading to participation in the Leeds meeting of the Yorkshire District of the British Gas Council in 1946 which, while declaring that it was not in favour of nationalisation, recognized that if the industry was in fact taken over by the State it was desirable that it should co-operate in the detailed implementation of the Government's proposals so as to ensure that the nationalised structure and organization were such as to maintain an efficient and economic gas service to the public.

Mr. Bloor entered the gas industry in 1898, when he was articled to Mr. T. C. Paterson, Engineer of the Birkenhead Gas Department. He graduated B.Sc. at Victoria University in 1902 and received the degree of B.Eng. of Liverpool University in 1904. On completing his articles he was appointed chemist and draughtsman and in 1907 became Chief Assistant to Mr. Paterson. When he was only 27 he was, in 1909, appointed Engineer and Manager of the City of Carlisle Gas Department, and four years later he went to York as Engineer and Manager, being appointed Secretary of the Company shortly afterwards. He was chief official of the Company during many difficult and trying periods, particularly in the first world war and the coal strikes of 1921 and 1926, and throughout that time the supply of gas in the city was uninterrupted, except on account of official instructions during air raids. Mr. Bloor, who had become a Member of the Institution of Gas Engineers in 1911, was appointed a Director of the York Company in 1936, retaining his position as Engineer, Manager, and Secretary.

On completion of 30 years of service he relinquished the Secretaryship in 1943 in favour of Mr. J. L. Steward, who since 1936 had been Accountant and Assistant Secretary. Later in the same year he retired from the post of Engineer and Manager to devote himself to representative work for the Company and directorial activities. He had already served as a member of the National Joint Industrial Council, a member of the Executive Boards of the National Gas Council and the Federation of Gas Employers; a member of the committee of the Gas Companies Protection Association; Vice-Chairman of the Yorkshire Tar Board, and a member of the Council of the British Road Tar Association.

On his semi-retirement he was appointed a Consulting Director to represent the Company on the national and other organizations. He was also Director of the West Yorkshire Gas Distribution Company, the Hemsworth and United Kingdom Coke Oven Company, and other companies, and Chairman of the Yorkshire Tar Board and the Easingwold Gas Company. At the end of 1943 a representative gathering of employees of the York Gas Company presented Mr. Bloor with a salmon rod, and the Directors passed a resolution placing on record their high appreciation of his services.

Personal

MR F. P. DYSON, Director in charge of Construction of Woodall-Duckham Construction Co., Ltd., has been appointed a Director of Woodall-Duckham, Ltd.

MR. W. SUTCLIFFE, General Manager, Blyth Division, Northern Gas Board, who has left to become General Manager of the Tyneside Division of the Board, was presented with a gold wristlet watch on behalf of the employees of the Blyth Division, by Mr. L. Nelson, unit engineer.

MR. E. J. HOSKIN has been appointed District Engineer and Manager of the Shipley and Bingley Districts of the Bradford Group of the North Eastern Gas Board. Mr. Hoskin became Distribution Superintendent of the joint districts in 1950 and prior to that had been Distribution Superintendent to the Shipley Urban District Council since 1945.

MR. RAYMOND B. GARSIDE, at present District Service Manager to the Thornton/Cleveleys undertaking of the North Western Gas Board, has been appointed Deputy Distributing Engineer to the Sui Gas Transmission Company in Karachi, West Pakistan, which is engaged on the distribution of natural gas. Mr. Garside was formerly Engineer and Manager of the Thornton/Cleveleys and Caernarvon Gas undertakings and earlier served with the Grantham Gas Company and the Spalding, Kendal, Keighley and Morecambe Municipal undertakings.

MR. T. J. DEANE, G.M., T.D., has been appointed Senior Buyer of the North Thames Gas Board. As head of the Buying and Contractors Department he is responsible to Mr. H. C. Exell, Controller of Supplies, for all purchases of the Board's stores. Mr. Deane had been a group buyer since 1948 and before his transfer to the formerly-named stores buyer's department two years before that, originally worked on the staff of the Managing Director's and Secretary's Department of the Gas Light and Coke Company which he joined in 1928.

Strabane (Co. Tyrone) Urban Council has decided to increase the price of gas by 7½d. per thousand cu.ft. to 10s. 7d. Recommending the increase, the Manager, Mr. J. Lusted, said that the cost of coal was at present £6 3s. 8d. per ton against £3 1s. 6d. in 1945, an increase of £3 2s. 2d. per ton, or £4,978 per year. Wages had increased by £2,333 per year, although the price of gas had remained the same during that period.

Calendar & Directory Alterations

The following changes have been notified during the past month. To keep the information in the current 1955 edition of the GAS JOURNAL CALENDAR AND DIRECTORY up to date readers are invited to note these alterations in the Directory section.

Page D69.—BLYTH: Delete W. Sutcliffe, *General M.*

Page D71.—TYNESIDE: W. Sutcliffe, *General M.* vice J. E. White.

Page D90.—SOUTHERN: S. H. Edwards (formerly *Sales M.*, Southampton), *Domestic and Commercial Sales Officer.*

Page D119. — KIRKCUDBRIGHT: B. O'Donnell, *District M.*, vice D. McCallie.

Page D154.—WALES AND MON. JUNIORS: C. E. Banham (Cardiff) *President*, C. G. Reeves, *Senior Vice-President*; R. H. Hanford, *Junior Vice-President*; T. Edwards, *Hon. Treasurer.*

Page D159.—BRITISH GAS STAFF ASSOCIATION: Removed to 34, Gloucester Gardens, W.2. T/N Paddington 1402/3.

Diary

May 5.—NORTH OF ENGLAND SECTION, I.G.E.: Fourth Annual General Meeting, Old Assembly Rooms, Newcastle.

May 6-7.—BRITISH GAS STAFF ASSOCIATION: Annual Conference Blackpool.

May 6-7.—SCOTTISH JUNIORS (WESTERN DISTRICT): Visit to Begwaco Meters, Ltd., Farnworth, Lancs., and to Partington Works of the North Western Gas Board.

May 7.—EASTERN JUNIORS: Annual General Meeting. Afternoon visit, ladies invited. Luton.

May 7.—MIDLAND JUNIORS: Jubilee Dinner.

May 7.—SCOTTISH JUNIORS (EASTERN): Annual General Meeting, Kirkcaldy. Morning visit to Tully plant.

May 11.—SOUTH WESTERN SECTION, I.G.E.: Documentary Film: 'Pipeline Construction,' by William Press & Son, Ltd., Exeter.

May 11.—YORKSHIRE JUNIORS: President's Day. Visit to Robert Dempster & Son, Ltd.

May 14.—WALES AND MON. JUNIORS: Joint Meeting with Western Juniors. Address by Mr. Gerald Nabarro, M.P. Cardiff.

May 14.—LONDON JUNIORS: Visit to Portslade works, Brighton.

May 16.—WEST MIDLANDS G.C.C.: Gas Offices, Edmund Street, Birmingham. 2.30 p.m.

May 16.—EASTERN G.C.C.: Connaught Rooms, W.C.2. 2 p.m.

May 17.—LONDON AND SOUTHERN SECTION, I.G.E.: Spring Meeting. Annual Luncheon and Chairman's address.

Smoke Abatement in Practice*

By G. E. FOXWELL, D.Sc., F.Inst.P., M.Inst.Gas E., M.I.Chem.E.†

THE position regarding the abatement of atmospheric pollution has changed so materially within the last six months that the old battle-cries have faded. It is true that no Clean Air Act is as yet on the Statute Book. Until it is, those who have been fighting this battle for so many years will no doubt keep their powder dry.

So recently as last February the Government announced that they had accepted and would incorporate in their Bill five main recommendations of the report of the Committee on Air Pollution. The remaining recommendations are not rejected but require more detailed consideration, and some would not require an Act of Parliament to put them into effect.

It appears to me that this meeting might with advantage consider how best to resolve the very considerable problems that acceptance of these recommendations will involve. At the outset, let me make the point that the measures to be taken involve both administration and fuel technology. Without good administration the change will create personal difficulties and complaints; good administration will enable it to be performed smoothly and with satisfaction to all concerned. Unless the whole operation is well organized the clean air movement could receive a serious setback, even though it has the force of law behind it.

The Committee on Air Pollution did not contemplate high-handed action with widespread compulsion. It is left to the discretion of local authorities whether they should institute smokeless zones or not. That means that the majority of the citizens in any area must be in sympathy with the measures that the local government decided to take.

While administration and education are supremely important, without first-class backing from the angle of fuel technology the whole operation would be impossible. It is not without justification that the Institute of Fuel has taken a leading part in providing a platform for the discussion of this subject. Fuel technologists can provide the tools. Local authorities and the fuel industries can finish the job.

Industry

Over the country as a whole, industry contributes 40% of the smoke. The requirements for industry of the Air Pollution Committee now to be translated into legal requirements are in effect nothing more than a demand that industrial fuel-using plant shall be modernized, maintained in good order, and operated skilfully.

It would be impossible to provide industry with sufficient smokeless fuels to replace more than a small fraction of the coal burnt in its raw state. Electricity for power and industrial gas for heat are taking an increasing share of the load, but for most purposes their cost is prohibitive. For well-known technical reasons, boilers and furnaces burning bituminous coal and oil will generally emit a light haze of smoke, and over very limited periods will even give rise to dark smoke. Bearing the practical facts in mind the Air Pollution Committee came to the conclusion that taking the country as a whole it should be possible within a comparatively short time to reduce smoke by 80%.

Smoke in amounts that would contravene the Clean Air Act is evidence of inefficiency. Can it be doubted that by asking industrialists to modernize their plant and keep it in order, we shall add to the capacity of their steam-raising plant and furnaces and in many cases production will be improved through better steam supplies and better control of heat? By promoting fuel economy through legislation we shall assist industry materially without imposing financial burdens.

Railway smoke, although only 15% of the whole, is a particular nuisance in towns containing main-line stations, shunting yards and, particularly, termini as in Glasgow and London. The Air Pollution Committee has recommended electrification, with the replacement of steam engines by diesel engines as an interim measure for routes unsuitable for electrification, together with the total replacement by 1960 of all shunting engines, whether railway owned or privately owned, by engines not using bituminous coal.

The problems of industry are straightforward since they involve nothing more than the application of plant that is already on the market, and of methods of maintenance and of training personnel that are already known. The domestic problem is much more complicated because it involves the co-ordination of many factors.

It is a primary condition for success in the domestic sphere that the domestic consumer shall be satisfied with the arrangements made for heating his house and his water and cooking his food by smokeless fuel. Cooking is comparatively easy. There are already nearly 12 mill. gas cookers and a million or so electric cookers in use, and so we could fairly conclude that people generally in the future would be satisfied to cook with these smokeless fuels.

Problems of Domestic Supply

We recognized that nearly all the solid fuels available could be used in closed stoves and quite a lot in open-closed stoves, but we found throughout the country a very general demand for at least one open solid-fuel fire. It was immediately apparent that the existing coal-burning grates would be quite unsatisfactory for use with the great bulk of the solid smokeless fuels available. They are also fundamentally inefficient; but it was not part of our purpose as an Air Pollution Committee to consider fuel economy or national fuel policy. In order to burn the solid smokeless fuels available, it will evidently be necessary to replace, on a very large scale, the existing grates and appliances by modern coke-burning appliances. Another problem immediately met us, namely, that most of the coke now coming out of gas and coking plants would not burn satisfactorily on even a modern coke-burning open fire. Finally, it quickly became evident that there would be nothing like enough smokeless fuel of any sort from present production or from production planned in the near future.

As if those problems were not enough, local opinion in many areas insisted that coke was already too high in price and that it was an unpopular fuel, while the gas industry on the other hand foresaw an increase in price to meet our requirements and immense difficulties in relinquishing their hard-won industrial and general markets to supply the domestic consumer on a much larger scale. They further pointed out that to reduce the price of coke materially would so increase the price of gas that sales would be gravely affected; and they could not make coke at all if the gas remained unsold. The view was also advanced insistently that carbonization coal was in short supply already and that it was most unlikely that any additional coal could be made available for carbonization. How these problems can be solved is set out in the report of the Air Pollution Committee.

Fuel Required

Because insufficient fuel was available to supply domestic consumers over the whole country, we decided to attack first those areas that were subject to fogs and suffered from smoke due to heavy industrial or domestic pollution. These, we termed 'black areas.' We found that in those areas there was broadly 19 mill. tons of house coal to be displaced, including unsatisfied demand due to rationing. On the assumption that 20% of the replacement would be by coke boilers and closed or openable-closed stoves, we found that the solid smokeless fuel for these appliances could be obtained from existing sources. The industries concerned agreed that some

* Paper presented to a joint meeting of the Institute of Fuel with the National Industrial Fuel Efficiency Service and the National Smoke Abatement Society on April 1, 1955, at the Merchants' Hall, George Square, Glasgow.

† Immediate Past-President of the Institute of Fuel.

millions of tons of smokeless coals or coke could be replaced by oil or non-coking coal and transferred to the domestic market. A certain amount of the smokeless fuels so released could be made suitable for the open fire.

We found ourselves left with a very large deficit. To close this gap we considered alternative methods of heating, including electricity. It is common ground that this country must seek to economize in coal. Electricity, like gas, suffers from the high cost of meeting seasonal demands and we agreed with the Simon and Ridley Committees that the main winter space-heating load must be taken by solid fuel. Moreover, since between 1.2 and 1.5 tons of electricity coal would be needed at the power station to replace one ton of house coal burnt on the old domestic open grate, it was felt that the nation could not afford to use electricity for domestic heating on a large scale. Carbonization, with use of the products in modern appliances, can be shown, on the other hand, to economize in coal. So we looked to the carbonizing industries and in particular to the gas industry to bridge the gap and to become the main source of the necessary fuel. This involved plans for the carbonization of an additional 10 mill. tons of coal a year.

The carbonization of the additional 10 mill. tons of coal will give rise to some 800 mill. therms of gas for which a use must be found. We have suggested that 360 mill. therms would be used to replace house coal for water-heating, bedroom and other intermittent heating, and short-period space-heating, the remainder being used by industry. We visualize the additional plant being provided as required over a period of 10 to 15 years.

Appliances for Domestic Heating

How are the appliances to be provided? We have proposed, and the Government has accepted, that the essential new appliances in the black areas shall be largely paid for out of public funds. Our conception of this was that the main space-heating appliance only should be so replaced at the public expense, with an exception when an old coal-burning range needed replacement. We suggested that £10 a house might cover, on the average, what we had in mind. Coke-burning appliances should be equipped with gas ignition if the user is to be satisfied with the time required to light the fire.

There is a large gap between this and a modern well-equipped house and it was left to the householder to buy better appliances and more appliances for himself, aided by hire-purchase and other schemes promoted by area gas boards or traders.

We must face the fact that to equip a house properly with modern-comfort heating appliances—space-heating, water-heating and cooking—will cost about as much as a television set. But I submit that it will give a far better return on the capital invested. An immense amount of research and development work has been put into the subject of domestic heating. All that is necessary is to apply what is available.

To be more precise, the Gas Council submitted to our Committee schemes for a complete heat service, by a combination of coke and gas for houses of 800 sq. ft. and 1,000 sq. ft. area. Here is a summary of the cost for one of these:

	£	s.	d.
Appliances	82	6	6
Purchase tax on gas appliances ...	13	13	6
Installation costs	14	0	0
	£110	0	0

People are ready to put down such a sum for a television set. Cannot we educate them to buy modern fuel-consuming appliances on similar lines to keep themselves warm and comfortable? That is a challenge to those who teach social science and to local authorities. In particular it is a challenge and an opportunity to the gas industry and to the Coal Utilization Council.

Cost of Smokeless Fuel

We were told in no uncertain terms that people would be dissatisfied if smokeless fuel cost them more than their present heating costs. Too often those advocating this view spoke in terms of cost per ton of coal or coke. For technical reasons —one of which is that nothing is lost in smoke—coke gives a higher efficiency than coal in domestic appliances and this must be taken into account when calculating costs.

What of the cost of using a combination of coke and gas? Gas is the answer to the intractable problem of domestic emission of sulphur and, if only for that reason, is to be encouraged.

The Gas Council, through the Watson House organization, put forward proved combinations of appliances for providing all-the-year-round heating and cooking services to houses of two sizes using an appropriate combination of gas and coke. Here is the annual cost:—

House of	800 sq. ft.	1,000 sq. ft.
Coke	£12 12 0	£13 17 0
Gas	£12 15 0	£12 15 0
Total ...	£25 7 0	£26 12 0

Coal cost: Ridley Report Table F

2½ cwt. for 33 weeks
1 cwt. for 19 weeks
5 tons of coal ... £32 10s.

Moreover, the coal in this comparison is used to provide cooking, water-heating and space-heating in one room, whereas the combination envisaged for gas and coke provides, *in addition:* (1) gas ignition for the coke fire; (2) gas fire in one bedroom; (3) means of cooking, water-heating and space-heating in the summer without lighting fires.

Quality of Coke

A British Standards Institution Committee is now in course of formation which will endeavour to lay down standards for coke for various types of domestic appliances including closed stoves, openable-closed stoves and open fires.

The ash content of coke should be reasonably low; this is entirely a problem in coal cleaning. The behaviour of the ash provides some difficult problems. If the coal is not crushed, the resulting coke may contain 'fliers,' pieces of shale that disintegrate violently on heating. These fliers seem to occur in particular coals and can often be avoided by judicious selection of the coal. On the other hand, the venom is removed from them if the coal is finely crushed. When the coal is finely crushed, however, the ash will be of very small particle size and is likely to become air-borne, causing dust in the room when the fire is stirred, while it may adhere to the surface of the coke as it burns away, causing an unsightly appearance. It is quite possible that this may prove to be no more than an exercise in coal cleaning, since the 'explosive' material appears to have a specific gravity of above 1.6. The moisture content of coke should be about 5%. If it is much less than this, the coke will be dusty. There are obvious reasons why it should not be much greater. Coke for domestic use should be of consistent quality between one delivery and another. Too often a customer who has had two or three deliveries of continuous-vertical-retort coke made from a lower-rank coal, finds that the next delivery is quite different in quality—generally owing to being made from a higher-rank coal in a static retort—and is quite unable to use it successfully. If all producers worked to a British Standard Specification which includes 'burnability,' this difficulty would be overcome.

The major problem appears to be to provide open-grate coke of a sufficiently combustible character, possessing the quality of ready 'burnability.' One important step is proper sizing of the coke and, where necessary, cutting the coke into the proper sizes. The gas industry in many parts of the country has neglected coke and is now finding it necessary to spend a good deal of money on coke-preparation plants. Such expenditure should not be regarded as connected with the clean-air requirements; it will be necessary in any event if coke is to be sold in competition with other fuels.

While sizing, moisture and ash influence the behaviour of the coke on the fire, and correct sizing is of particular importance, none of them affect the constitution—and therefore the fundamental properties—of the basic carbonaceous material of which a coke is composed. These properties are a consequence partly of the composition of the coal from which the coke is made and partly of the treatment given to the coal during carbonization.

Some facts that are well established are these:—

(1) Cokes made from low-rank coals, say, coals of Groups 600 and 700, are more reactive than those made under similar conditions from higher-rank coals of Classes 301, 401, 402 and Group 500.

(2) Cokes made in continuous vertical retorts at high temperatures are more easily burnable than cokes made at

similar temperatures from the same coal in static retorts or ovens. Experience has shown that cokes made from coals of Groups 600 and 700 in continuous vertical retorts, properly sized and of reasonable ash and moisture content, are quite suitable for use in modern coke-burning open fires.

3) There is a critical carbonizing temperature, which varies for different coals but is generally not lower than 700°C. nor higher than 800°C., above which coke changes in character and becomes less easily burnable.

Many coals, particularly higher-rank coals, should not be heated above this temperature during carbonization if they are to produce a coke satisfactory for the open fire.

In the gas industry it is found that with horizontal-retort coke, the gas needed for ignition decreases with increase in volatile therm content of the coke up to a value of about three to four volatile therms a ton, but any further increase in volatile therm content has little influence on ease of ignition. A change in carbonizing conditions to enable four volatile therms to be retained has little effect on the gas yield. It may be suspected that retention of a few volatile therms is closely connected with the critical temperature just mentioned. Volatile-therm content is probably little more than a measure of the temperature to which the coke has been heated in the retort or oven.

(4) Any coal, even the high-rank 301 coals, can be made to yield an easily burnable coke if it is carbonized at a low temperature—*i.e.*, if it is not heated above about 600°C. This is the basis of the Coalite process; but the fuel will be costly in terms of price per ton and more costly to the consumer in terms of pence per useful therm than Group 4 coal.

(5) Non-coking, low-rank coals can be carbonized in lump form and produce an easily-burnable coke. This is the basis both of the Rexco process and that in use in continuous vertical retorts at Granton gasworks, Edinburgh. If the gas generated in the retort is used to good effect, this type of process, I am convinced, could be so developed as to produce a very suitable fuel at reasonable cost.

(6) Advantage can be taken of the better combustible properties of low-rank coals to produce a coke that is strong and easily burnable. The lower cost per ton of the non-coking component of the blend should cover the cost of blending.

At the same time, it must be borne in mind that the yields of coke and gas from these non-coking and low-rank coals are less than from the true gas coals. There may be a reduction of 4-8 therms a ton or more in gas yield and up to 2 cwt. or 3 cwt. a ton in coke yield.

Bearing in mind these fundamental principles, it cannot be doubted that a suitable solid smokeless fuel can be produced in existing types of carbonizing plant. It is possible that new processes may be evolved, but the history of carbonization indicates that it is unwise to base firm plans on any new development until it is operating satisfactorily on a commercial scale.

The fuel that is required for the replacement of the 19 mill. tons of house coal burnt in black areas cannot be made available overnight. It will take time to arrange transfers of coke by replacing substantial existing tonnages by other fuels. The methods of carbonization and preparation must be modified to produce coke of the proper quality. Much can be done within two or three years, but the whole programme will take at least 10 to 15 years. Consequently, the principle of *festina lente* must be followed in designating zones. It would be fatal to designate a zone before the fuel and appliances were assembled and in position.

Coal Supplies

The nation is short of coal and future coal supplies are giving cause for anxiety. The gas industry has been kept so short of gas coal in recent years that it is now making gas from oil. Whence shall we obtain the coal for this ambitious programme?

The Gas Council in its evidence to the Ridley Committee computed that (to quote the words of the evidence) 'by replacing coal (used for domestic purposes) with coke burnt in modern efficient appliances in the winter and by gas for water-heating and occasional space-heating in the milder months of the year, and by restoring the electricity used to its proper function of light and power' there would be an annual saving of 15.77 mill. tons of coal a year. It is not necessary to accept all the details in this calculation to conclude that the clean-air operation based on carbonization that we are here considering is likely to result in very substantial savings in coal.

Moreover, some 19 mill. tons of house coal, large coal, will be replaced. For what will that coal be used? The 1953 report of the National Coal Board showed that in that year 56.5 mill. tons of large coal were used in this country, of which 54% were supplied to domestic consumers and 23% to the railways. Neither the domestic consumer (in a smokeless age) nor the railways (in an electric and diesel age) will require the 19 mill. tons of large coal that will be displaced. E. H. Browne, Director-General of Production of the National Coal Board, indicated in February last that the use of large coal which is now consumed in open fires and steam locomotives should decline, and added: 'and so it should since the ways in which large coal is used are generally inefficient.' As a great deal of this large coal is of the coking and gas types (500 and 600), sufficient coal for the smokeless-fuel programme could be obtained from this displaced coal alone.

Moreover, many millions of tons of carbonizable coal are now burnt under boilers. Why cannot some of this be replaced by oil or non-coking coals? If blending were selected as a means for making easily burnable coke, or non-coking coal were carbonized in lump form, supplies would be still further augmented. The operation may not be completely simple and straightforward; but, given adequate co-operation from all concerned, the coal needed can be made available to the carbonizing industries. This applies also to coal for the production of metallurgical coke—but that is another story.

Conclusion

It has been possible only to touch on some of the high spots of the gigantic but beneficial operation on which we are now engaged. The method of tackling this problem has been very carefully thought out and what is proposed is practical. The cost to the individual concerned should be very small and what he is asked to do is very much to his advantage. Industry and the domestic consumer alike are asked to modernize their outworn methods of using fuel. Local authorities and fuel industries and private citizens are asked to undertake a work that will be of no small value not only to themselves, but to posterity. Clean air, better use of fuel, better conditions in the home—these are Progress.

GLOSSARY FOR VALVES AND VALVE PARTS

The British Standards Institution announces the publication of a Standard Glossary for valves and valve parts (for fluids) Part 1: Screw-down stop, check and gate valves (B.S. 2591: 1955). In the course of the preparation of British Standards for valves of various types and for various purposes, it has become apparent that there is a need for consistency in the terminology used to describe individual valves and their parts. Consequently it has been decided that, as new standards for valves are prepared, and existing standards revised, their terminology will form the subject of glossaries published as additional parts to B.S. 2591. This Standard defines types of, and parts for, the following types of valves: *Screw-down Stop Valve*: Globe, oblique, angle and needle valves. *Check Valve*: Horizontal, vertical and angle patterns of swing type and lift (disc, piston and ball) type, screw-down stop and check valves and foot valves. *Gate Valve*: Wedge gate, sluice, double disc gate and parallel slide valves, both inside and outside screw. Copies of this Standard which contains 19 illustrations of typical valves may be obtained from the British Standards Institution, Sales Branch, 2, Park Street, W.1, price 10s. 6d.

Gas Industry: Intermediate Grades.—The following statement has been issued by the National Joint Standing Committee for Intermediate Grades in the gas industry: At a meeting of the National Joint Standing Committee for Intermediate Grades held on April 24, it was agreed that increases of £25, £30 or £35 per annum according to Grade shall be applied to Grades of Pay for male Intermediate Grade employees in the gas industry. Eighty per cent. of these increases shall be applied to the Grades of Pay for female Intermediate Grade employees. These increases take effect from Sunday, April 3, 1955.

The First Six Years in Scotland*

By JOHN FORD, Inverness.

LOOKING back from today to 1949 it is clearly apparent that events were at work which were to bring to an end the 10-year period of the greatest expansion in the demand for gas which we have ever known, during which gas and appliances almost sold themselves, and our only concern was how to keep pace with growing outputs. Then the greater part of our apparatus of manufacture and supply was carrying capital and interest charges based on pre-war costs. Our selling price of gas was much lower than current replacement costs could possibly justify. We were at the crest of the illusionary advantage, which an inflated economy appears to bring.

With consumer goods in short supply, food and coal strictly rationed, our customers were happy to spend their money on the comfort which increased use of gas could bring to them. But 1949 and 1950 saw the balance between available goods and money beginning to return to a more normal state, and the phenomenal increase began to ease. To make matters worse the programme of post-war reconstruction and extensions of plant was now well under way and required to be paid for from an almost stabilized output. It was fair to assume in 1949, as many of us did, that no matter what increases in the cost of coal, materials and wages the future might bring, these would to a great extent be nullified by our continuously expanding outputs, as they had been in the immediately preceding years. But all our affairs are subject to external influences sometimes impossible to foresee and assess and, unfortunately for us, the bright promise of never-ending progress of the previous ten years was to slow down.

In the light of after events if one were to be asked to choose the most unpropitious and difficult time to transfer the whole of the Scottish gas industry to a single control charged by the Gas Act to 'develop and maintain an efficient, co-ordinated and economical system of gas supply' then 1949 would assuredly be chosen. Discarding the parochial and selfish views which previously clouded our judgment it is clear that, but for the advent of nationalisation, our industry in Scotland would not be in anything like the strong position it holds today. The bulk of the 110 undertakings which in 1949 had outputs of less than 50 mill. cu.ft. per year would by now have been struggling against slow extermination. The blizzard of rising costs of the past six years would undoubtedly have forced their prices far beyond what might be considered a reasonably competitive level.

These undertakings have benefited not only from the financial help of their larger and more prosperous neighbours but also from the availability of capital for all essential, but previously often neglected, schemes of reconstruction and development. Not least have they gained from expert advice, ready assistance and pooling of resources possible only in a unified industry.

I would here say a word in praise of the acumen and hard work of those who manage these small works. In general they carry out a good job in most difficult circumstances and their purely technical results are often as good as those obtained with much larger plants. That, in spite of this, they have to operate with little hope of having the satisfaction which comes from a balanced budget is, to say the least, a disheartening experience.

But we must agree that the larger undertakings, too, have gained from the help given to the smaller works. Nothing would have created a more adverse feeling in public opinion on the future of our industry than the spectacle of supplies being withdrawn in some of the smaller communities which would inevitably have come about. Our achievements everywhere in technical matters during the past six years can also give cause for satisfaction that so much has been accomplished in so short a time. Improved efficiency of manufacture and supply are apparent in many of our works where previously for various reasons these left much to be desired. The integration of about 25 small works with larger and more efficient undertakings has also contributed to the overall improvement.

Like all revolutionary changes, however, unification of our industry could not and did not take place without some losses to be set against gain. Particularly was this so in the field of personal relationship. Overnight many of us lost that feeling of close intimacy and understanding with our employers which came from operating in small units and our goodwill built up in many cases over a long period of years.

Due to no lack of will on the part of anyone, the expression of these human factors is possible only to a limited extent in the large organization we now serve and is something which we all recognize as unavoidable. Nevertheless, as the realization has come about, even among the most diehard opponents of nationalisation, that it has proved a tremendous advantage to the whole of our industry, and therefore to our own ultimate benefit, a new kind of relationship has emerged. We know that in all our problems we are never alone, and the more a problem is shared the more readily it can be overcome.

The chain of command set up on vesting day has with slight modification shown itself to be well adapted to ensure sound administration over the whole area. That there may have been minor clashes of personality was inevitable when managers, accustomed to complete independence, found that their own views did not always coincide with the instructions they were compelled to carry out. Now our acceptance of instructions is commonplace but we still find that in our everyday work we have a remarkable degree of freedom.

Increasing Costs

Few of us have ever known a time when it has not been said that the gas industry was passing through a critical year. Whether, as I believe, the same adjective can be applied to the present year, only the future can prove. It is certain, however, that not for a very long time have there been so many factors apparent which must affect us in one way or another. The first and most important of these and one which is bound to provoke the greatest concern is that of increasing costs. Wages have recently gone up by a substantial amount and it is not improbable that coal and transport charges will in due course follow suit. These increases affect our selling prices much more than those of our chief competitor, and thereby reduce the margin of price advantage which we still have. It is quite apparent that a continuance of these increases at the same rate as those of the past few years would ultimately make our position extremely difficult.

The scope for effecting further savings in our manufacturing processes cannot now be very substantial, and improved efficiency from new plant may well be cancelled out by increased capital charges. This is a problem to which there is no certain answer. There are, unfortunately, no indications that the national economy is reaching a period of near stability. Our experience over the past few years of having all the savings we have made, by dint of extra effort, engulfed in these rising prices would almost tend to make even the most conscientious slacken off. But our pursuit of increased efficiency, in all our activities, must continue with unabated vigour, in the knowledge that the greater the costs the more the opportunity.

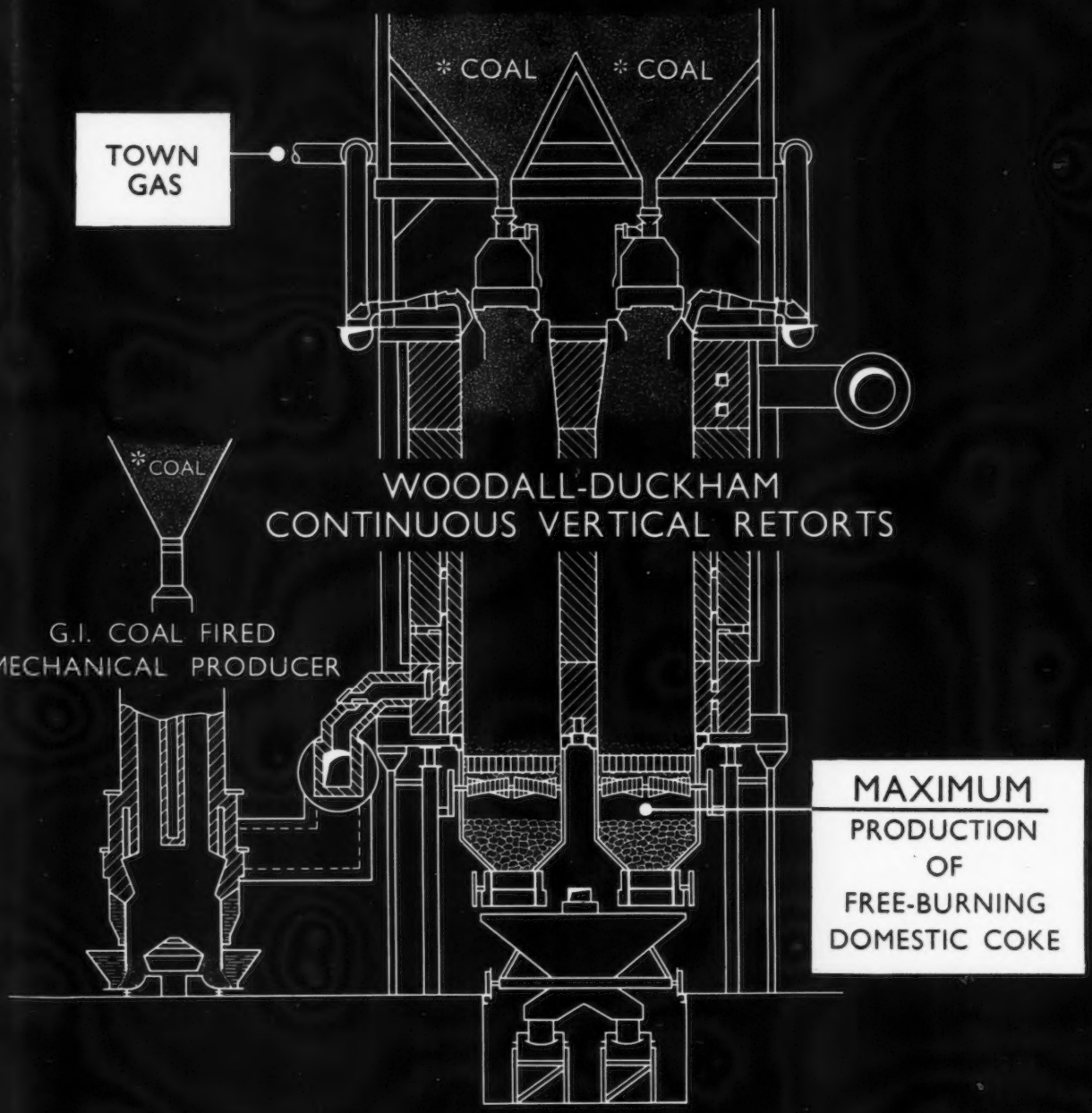
Clean Air Bill

The announcement by the Government that it is their intention at an early date to introduce a Clean Air Bill must raise a good deal of conjecture as to its future effect on us. The question of whether or not we would in course of time emerge as a single fuel industry is one that has occupied the minds of many over past years; and until recently it certainly seemed that there was a definite trend in that direction as a result

* From the Presidential Address delivered at the Spring Meeting of the Scottish Association of Gas Managers, Peebles, April 22, 1955.

BLUE PRINT FOR TOMORROW

THE PRODUCTION OF FREE-BURNING SMOKELESS DOMESTIC FUELS FROM SIZED WEAKLY CAKING COALS *



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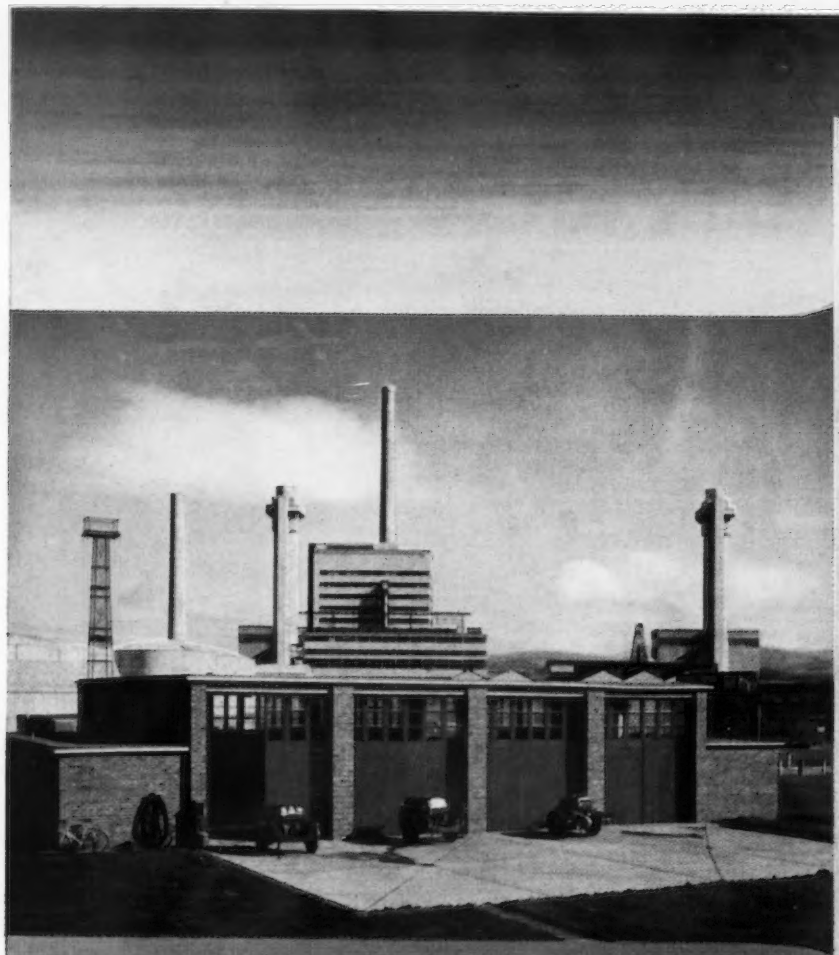

Britain's Atomic Factories

The whole of the pipework in the highly and medium radio-active areas on the primary separation plant and vessels in the highly active section of Britain's Atomic Factories were fabricated in stainless steel and installed by Ashmore, Benson, Pease & Company. Using many welding sets, in conjunction with Argon arc sets, Ashmore's installed over ten miles of pipework with 40,000 butt-welded pipe joints and completed five miles of plate and sheet welding. Twenty-five X-ray sets were employed and extensive use made of radio-active isotopes. Approximately 60,000 radiographs were filed.

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of the shortage of coal. New processes in course of development such as the total carbonization of low quality coals and the gasification of oil by various means definitely pointed to methods of production of gas only. Although none of these processes was likely to have any marked effect for a number of years to come, in the interim, greater production of carburetted water gas could be expected which would reduce the amount of coke available for sale. It now seems that the industry may have to retrace its steps and place coke production in the forefront of its programme. Only coke or some other manufactured form of solid smokeless fuel can economically solve the problem of domestic smoke. Gas also has a very important part to play but the main burden will of necessity lie with the solid smokeless fuels.

We have so often reiterated that it would be in the national interest greatly to increase the quantity of coal which we carbonize, that our industry cannot but accept the challenge. There are many difficulties to be overcome, some of which will not be easily solved, but, if we are ever to have a smoke-free Britain, it can only be established on the basis of gas, coke, and other forms of solid smokeless fuel, to the production of which our plants and methods can be adapted. The opportunity has such tremendous potentialities that it may yet alter the character of our industry and lead to what has been long advocated—a realistic national fuel policy, in which we shall take our rightful place.

Nuclear Energy

Having forecast a promising future it might be appropriate to say something of the demise of our industry prophesied at no far distant date through the development of nuclear energy. A somewhat similar fate was also prophesied 60 years ago in the early days of electrical development, and in the meantime our output has increased by about 500%. The vision of heat and power for next to nothing exists largely in the imagination of modern journalists and the minds of the many who are influenced by them; although even some within our own industry appear to have been affected by this mirage of ultra cheap electricity from atomic power and are placing far too much stress on something which has yet to prove itself. Those who are best qualified to give an opinion can only optimistically estimate, that subject to a number of factors about which there is still some doubt, electricity produced from nuclear energy will cost no more than that presently produced in a modern power station.

Even with improved efficiency which may be gained by experience of the earlier stations, the best that can be promised is that in the later stations the cost will not be greater, the increased efficiency being likely to be offset by the reduced value of the by-products produced. In the foreseeable future it would seem that our ability to compete with electricity will not be radically altered by these new methods of generation. Over a large area of Scotland, we already meet competition from electricity produced from a proved source, cheaper and just as inexhaustible as the disintegration of the atom, that is water power, and not, be it noted, without some measure of success.

It may be that in the distant future there will be developments in the production of electricity from nuclear energy that will lead to all other sources of heat and power being largely outmoded. In the long meantime let us not be like the impressionable gas manager with the worried look, who, when asked what troubled him, replied that he had just read that our coal resources would only last for another 600 years.

Electrical Competition

Of immediate importance to us are the present plans of the electricity boards for their expansion of sales. During the next 10 years they hope almost to double the use of electricity in both and industry, and in the 10 years following to increase to over three times their present output. While industry can no doubt absorb all this additional amount of energy mainly for power purposes, it is clear that they cannot possibly hope to attain their target without making very serious inroads on the domestic market for gas.

Let us not be lulled into complacency by the idea that in 20 years the general standard of living may have so increased and the demand for additional comfort in the home thereby raised, that the domestic market will require all this additional electricity as well as the service provided by gas. We must be prepared to meet competition even stronger than we have had in the past, and must be determined not only to hold what we have but to continue the expansion of the use of gas in the home. We shall see a continuance of the pernicious system of tariffs adjusted to 'use' value, by means of which the unique advantages of the electric motor as a source of power are used to obtain from industrial power users a higher price than the cost of providing the service justifies. The domestic load being subsidised thereby in order to compete with us.

That the price of domestic electricity increased by only 0.01d. per unit in the years between 1938 and 1954 as compared with an increase in the price to industry of 0.5d., although the relative increase in demand was about the same, shows that we have unfair competition to meet. Both the Simon and the Ridley Commissions on Fuel Policy advocated that the price of all fuels should be related to the cost of supply. But until we have some realistic co-ordination of all the fuel industries in the interests of the country as a whole we cannot hope for any change.

Domestic Sales

There can be few of us who have not been somewhat concerned over the falling consumption in the domestic market during the past few years, even though we are satisfied that this has no permanent significance. The downward trend has been influenced by many factors all of which are well known to you, more efficient appliances, a succession of mild winters and higher cost of gas. Of these the latter is perhaps the most important, as, while the quantity sold has decreased, the revenue has very substantially increased. It is a phenomenon not entirely outside even our own personal experience that costs of living tend to expand in front of and not behind increases in wages and salaries resulting in recession of domestic buying power in many directions. At no great risk of proving a false prophet I will forecast that the figures of domestic sales during the past year will show that the decline has been arrested and they are again on the increase. The bright side of the picture is that the number of our consumers tends progressively to increase. The figures for the past year are not yet available but in the previous year in Scotland altogether 15,200 more were added. Statistics do not always convey the entire story, and the increase quoted takes no account of the large number of new houses, in which gas was installed, but which are counterbalanced by old houses due to be demolished.

Appliance Sales

Our sales of appliances are of vital significance to our future, and will probably be in the region of £2¾ mill. for the year just ended. Any industry which can persuade its customers to invest at this rate must have something attractive about its service or some very persuasive salesmen, or maybe a combination of both. But in relation to the potential sales of appliances and consequently more gas, are we sure that our efforts are as good as they might be, and do we sufficiently realise that time is all important? Every appliance installed by a competitor for which we could offer an alternative is an opportunity lost to us in most cases for ever.

We must never be satisfied with our achievements in selling our service, but ever turn our thoughts to always doing better. For many years the domestic cooker has been our mainstay, but no longer do we hold a near monopoly in this field, as we have done in bygone years. Today cooking is still our basic load and, as such, is vital to our existence. We all realise this and place the retention of this load in the forefront of our sales efforts. Occasional losses are inevitable and are more than made up from new business we may have won, but a good deal of capital may have been spent to redress the balance.

But may it not be that the holding of the cooking load has obscured the importance of winning a much larger amount of the other loads open to us, such as water heating and space heating. The total value of our sales is impressive, but, when one looks at the number of water and space heaters sold in relation to the number of consumers, it is apparent that we have nothing to be particularly proud about. Potentially every home in Scotland has use for a gas or electric water heater, and I doubt if even one-third have one of these at present. The market is a large one, and most profitable, in that substantially increased consumption may be gained, with-

out additional capital expenditure. Most of the public are now 'sold' on the idea of a water heater, even though it be only for summer use. With the obvious advantages of gas, we have the opportunity which must be taken if we are to expand the domestic load.

Additional space heating is equally important to us, but the high cost of gas space heating appliances, in relation to their electrical counterparts, makes the expansion of this load, on any mass scale almost impossible. Nothing would be of greater help in reaping the rich harvest awaiting in both water and space heating than lower cost of appliances. Purchase tax is, of course, a most grievous impost. Its continued retention results in the paradox that, in a country where fuel conservation is of first importance and with a Government who intend to introduce a Clean Air Bill, the very appliances that could contribute much to these ends are subjected to a penal tax. It was a recommendation of the Beaver Committee that this tax should be revoked. No doubt it will receive some further consideration when the Clean Air Bill comes before Parliament. Another factor which has an adverse effect on the sale of water and space heaters in the smaller towns is the high cost involved in their installation.

It has been established, and rightly so, that the price of gas should be related to local costs. But installation charges for appliances are uniform, in spite of the fact that work of this kind can be carried out substantially cheaper in the smaller towns where higher gas prices make sales more difficult. This question is tied up with an agreement reached with the plumbing trade, but might be well worth further examination. Our industry during the early part of the present century, faced with problems not unlike those which exist today, was revitalized by bringing the use of gas for cooking within the reach of everyone by means of the cheap hire or free loan cooker, subsidized from gas sales. That the end justified the means cannot be gainsaid. Such a policy is not possible today, but it would seem that we have gone to the other extreme and are now using appliance sales as a means of making profit. It is greatly open to doubt that in the end this will prove to be a wise course. In its evidence to the Ridley Committee the British Electricity Authority, explaining the lower consumption of electricity in this country compared with the United States and Canada, said 'it is probable that the chief reason for our lower scale of usage has been the high initial cost of consuming appliances.' If that applies to sales of electricity, might it not equally apply to sales of gas?

Press Relations

All of us are aware of the adverse references to gas which appear from time to time in the Scottish daily press, either in the news or readers' columns. All the nationalised industries are, of course, subjected to a measure of criticism, sometimes justified, but at other ill-informed. One cannot help noting, that in the case of railways and electricity, some effort is made to undo any harm that may be done, by an explanation of the circumstances, if fault there was, or by a defence of themselves, if the criticism is unfounded. But no matter how unfair the comment, or misleading the article, we maintain an air of complete aloofness. This certainly leads the public to believe that all that is printed about us is true, and must to some extent affect their confidence. Our relations with our customers have a more intimate quality than those of other nationalised industries, and we owe it to them to defend ourselves from unjust statements. If these other industries can find justification for a Press and Information Officer, so also, I think, can we. Much of our future success depends on how how we stand in the esteem of the public, and this is built up not only by good service, but also by what they may read about us. For far too long have we hidden our light beneath the proverbial bushel. It it now time that we let the public read of some of our successes and achievements.

BRITISH STANDARD SPECIFICATION

A British Standard for horizontal mild steel welded storage tanks (B.S. 2594:1955) relates to the design and construction of mild steel fusion welded horizontal storage tanks with dished and flanged ends complying with Table 4 of B.S. 1966 'Domed ends for tanks and pressure vessels' and also to tanks with unflanged outwardly dished ends. The sizes of tanks range from 3 ft. 6 in. diameter by 4 ft. nominal length up to 9 ft. diameter by 30 ft. nominal length. B.S. 2594 specifies requirements for tanks of adequate safety and reasonable economy, in a range of sizes to suit the requirements of user industries. These tanks are intended for the static storage of liquids which are not corrosive to mild steel. The tanks are classified by dimensions instead of by capacities which has hitherto been the practice in the trade. As a guide to the user the gross capacities of these tanks are given in the tables.

Tanks with flat ends and tanks with inwardly dished ends are not provided for in this standard. Copies of it may be obtained from the British Standards Institution, Sales Branch, 2, Park Street, London, W.1. Price 4s.

LECTURE ON STORAGE WATER HEATING

Some of the various types of storage water heaters manufactured by Radiation, Ltd., were recently demonstrated at lectures given in the Wrexham and Colwyn Bay groups of the Wales Gas Board. The lectures had been arranged by Mr. Lloyd and Mr. Blythe, the Group Managers, in conjunction with Radiation Technical Service. They were attended by the salesmen and district representatives of both groups.

These included Messrs. Butler and Poole, the Distribution Superintendent and Sales and Service Officer respectively of Wrexham and Mr. Stanley, Engineer and Manager of Penmanmawr and Mr. Eaves, Distribution Superintendent of Colwyn Bay. The lectures were given by Mr. A. Searle of Radiation Technical Service, who was assisted by Mr. W. Wort of Radiation Group Sales, Ltd.

The various appliances, which included a large glass model, were all displayed working, while a large dial thermometer in the centre of the display recorded the temperature as water was 'drawn' from each appliance; the water was measured into a bath, buckets, etc. The quantity and the temperature of the water was observed by the audience and recorded on a suitable blackboard, while the lecturer followed through a time-table, carefully observed by ringing of pre-set alarm bells, depicting the use of hot water in a normal household, from making the morning tea to the final bath at night.

VALUE OF RECOVERING WASTE PAPER

Waste paper recovered from domestic and industrial sources has, in recent years, become an essential raw material for the mills producing paper, building board, fibre-board containers and packaging generally. The 1954 report of the Waste Paper Recovery Association, Ltd., reveals to what extent the paper and board-making industry of Great Britain has come to rely on waste paper and also the excellent recovery organization which has been built up since the war to satisfy that need. Over a million tons of waste paper was recovered and consumed last year and this saved the country some £25 mill. in foreign currency. In addition, waste paper enables the local authorities engaged in the service to contribute quite considerably towards the costs of their cleansing services. The paper and board-making mills need a further 100,000 tons in 1955; this, it is hoped, existing recovery services will provide during the next few weeks.

The **Institute of Welding** and the **British Welding Research Association** held a Luncheon at the Hyde Park Hotel on Monday, April 25, to celebrate the eightieth birthday of Sir William J. Larke, K.B.E. Sir Claude Gibb, C.B.E., F.R.S., was in the Chair, supported by the President of the Institute, Mr. R. G. Braithwaite, and the Chairman of Council of the British Welding Research Association, Sir Charles Lillicrap, K.C.B., M.B.E. Mr. Braithwaite presented to Sir William the certificate of his Honorary Fellowship of the Institute of Welding and Sir Charles Lillicrap presented an illuminated address on behalf of the Institute and the British Welding Research Association. The toast of Sir William Larke's health was proposed by Sir Claude Gibb, the Chairman.

New Plant at Bude*

By ROBERT MILLER,
Assoc.M.Inst.Gas E., M.Inst.F.
(*W. J. Jenkins & Co., Ltd.*)

The finished plant in which gasmaking commenced on July 3, 1951.

IN 1948 an order was placed with W. J. Jenkins & Co., Ltd., for the installation of an intermittent vertical chamber oven unit, together with coal and coke handling systems, for the Tiverton Gas Department. The order also included a coke grading and storage plant. With the advent of nationalisation, the South Western Gas Board developed plans for the integration of the whole of its area of supply, one result of which was the decision not to proceed with the installation of new plant at Tiverton. In August, 1949, the decision was taken to transfer the Tiverton contract to Bude. By then, design and fabrication of the contract was so far advanced that any major modification to the plant to suit the differing load conditions between Tiverton and Bude could not be reasonably considered and it was agreed that the transfer would be of the plant as designed and ordered for Tiverton. At that time it was visualized that the load on the Bude works would be increased by taking gas to Holsworthy.

A specification and tender had been submitted for the Tiverton installation, but in September, 1949, a request for a new tender and specification for Bude was made, subject to the over-riding approval of the Town and Country Planning Authorities. This approval was granted on December 23, 1949.

Contract Approved

Ministerial approval of the contract was received on February 14, 1950, and the starting date given as 'Immediate.' The foundation contractors arrived on the site on March 8, 1950, and the contract had begun. Certain difficulties were met during the foundation work, these being the finding of water at 5.74 ft. below datum and the fact that much of the excavation proved to be in hard rock. Local information had given the impression that excavations would be in marl, and meeting rock was unexpected. My Company, as main con-

* From a paper presented to the Western Junior Gas Association at Bude, March 26, 1955.

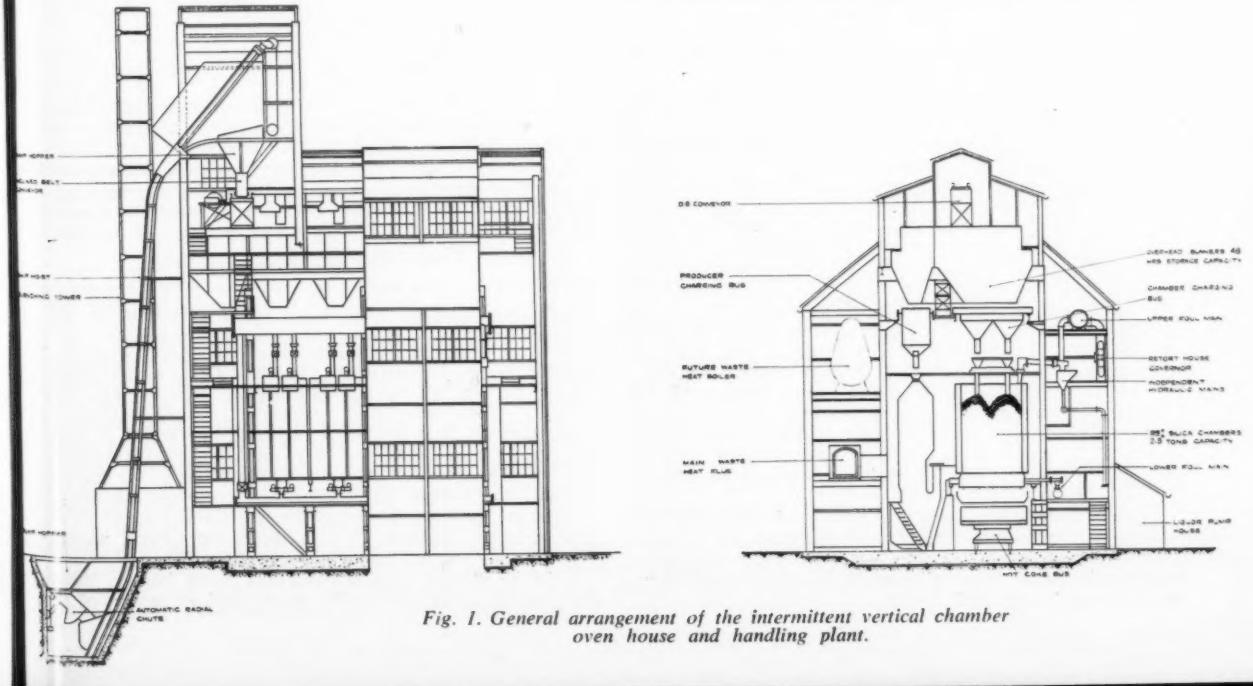

Fig. 1. General arrangement of the intermittent vertical chamber oven house and handling plant.

tractors, was rather concerned about the possibilities of the juxtaposition of soft earth pockets and rock. Instructions were given to remove such pockets, if met, down to rock and to fill back with concrete. The foundations were completed in October, 1950, and our men attended the site to commence erection of steelwork. A good rate of progress was maintained and the contract was so well advanced that drying fires were placed in the producers and chimney in late April, 1951.

The progress must be considered as extremely good as the site cut up very badly, despite the rock sub-strata. Throughout the autumn of 1950 and winter and spring of 1951, the surface was semi-liquid mud of varying depths, and gumboots were the only practicable footwear. Railway sleepers were used to form site roads, thus enabling mobile cranes to be used for handling materials from the stock pile to the construction site. It is interesting to recall that, at the lower end of the site, the sleepers ultimately vanished into the mud and were never recovered.

The carbonizing unit consists of eight 2.3 tons intermittent vertical chamber ovens. The bench is arranged in four settings each of two chambers, each setting with its own recuperator and built-in producer. Division walls, in silica and firebrick, are 14 in. thick, while end walls are 2 ft. 7 in. thick, 14 in. being in silica and firebrick and the remainder common brick. The chambers are approximately 15 ft. 3 in. high by 9 ft. wide, suitably tapered on the minor axis. The capacity is 103.5 cu.ft., or 2.3 tons of coal, with a density of not less than 50 lb. per cu.ft. They are constructed in 95% silica material, apart from the base blocks, charging hole blocks and top courses, which are in hard burnt, high alumina fireclay.

Producers are of the built-in, step-grate pattern, with C.I. plate bearers and step plates. Recuperators are of the contra-flow type, constructed of high quality firebrick material, close grained high silica content and of low porosity to give maximum conductivity. The bench is generously insulated on top and side walls.

The bench mounting charging ports and plugs, top and bottom gas offtakes and vertical connecting main are all in C.I. The chambers are provided with independent hydraulic mains, incorporating their own sealing-off device, tar run-off, liquor supply, tundish and pitch basket.

Top and bottom collecting mains are in mild steel of welded construction. The R.H. governor, by Bryan Donkin, is of the gas pressure relay, diaphragm type. Liquor sprays are fitted in the gas offtakes and collecting mains, and, with their own pumps and separating tanks, form a complete circulating system. All liquor valves are 'Audco' plug-type cocks.

Overhead coal and coke hoppers provide the feed to the producer charging bus and the chamber charging bus. The latter is fitted with lowering chutes, which, when lowered by manual control into the chamber ports, engage with automatic feed chutes from the coal hopper of the bus. The function of these lowering chutes is to give a uniform depth of charge to each oven without over or under-filling. The carbonized charge drops into a hot coke bus of special flat-bottomed design; C.I. liners are used wherever necessary. The design is such as to ensure that the coke charge is thoroughly quenched, quickly and easily, without permitting troublesome 'hot-spots' of unquenched coke to exist at the end of the quench period.

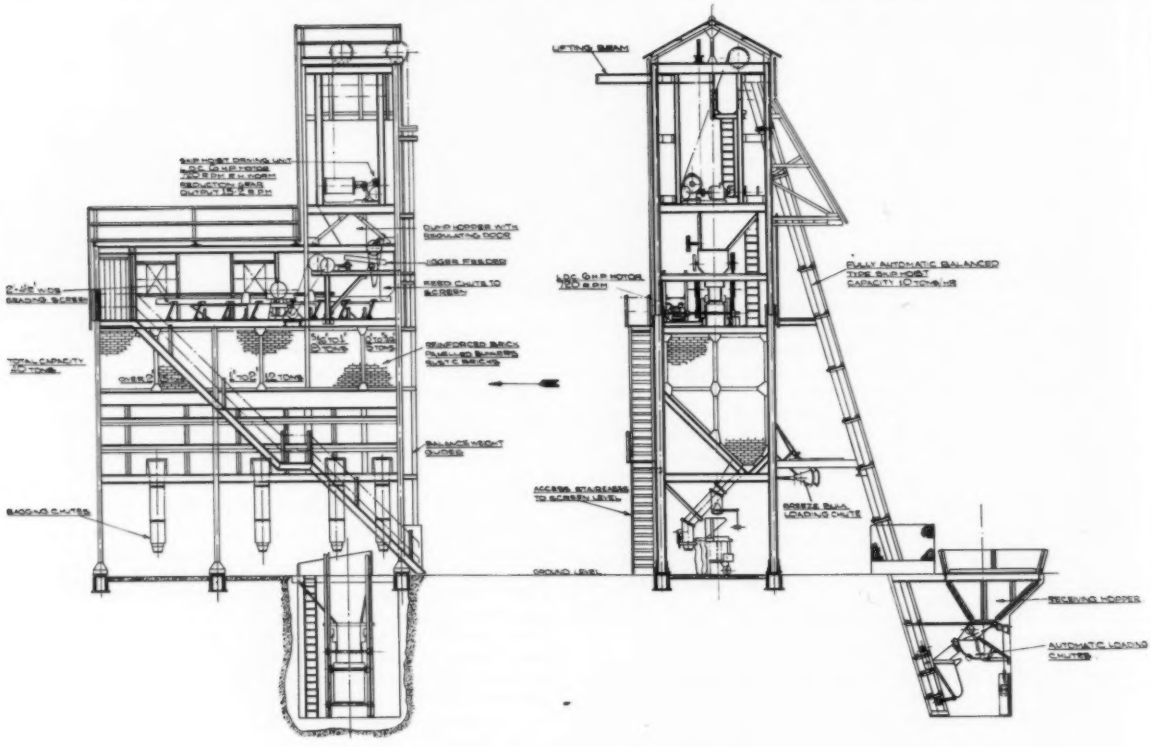

Fig. 2. General arrangement of the coke plant.

Quenching of the charge is carried out by a predetermined quantity of water from an overhead tank, the operation being carried out in a brick walled quenching chamber, surmounted by a timber-lined, steel-framed tower to carry off the steam.

Coal, Coke and Breeze Handling

All materials into the house are elevated by means of an automatic, electrically-operated, balanced skip hoist of conventional design.

The materials pass from the skip dump hopper to a short, inclined 24 in. belt conveyor, approximately 13 ft. centres, and from the belt to the distributing conveyor over the bunkers. The distributing conveyor is a D.B. chain of approximately 38 ft. centres, so situated that feeding to either the coal or coke bunkers (each of 48 hours' capacity) merely involves the movement of the requisite slides in the carrying trough. The hopper for holding the breeze pad material is located at the skip hoist end of the house and joins on to the coal and coke bunkers. Fig. 1 shows the general arrangement of the I.V.C.O. house and handling plant.

Coke is handled by skip hoist to a dump hopper, thence by a reciprocating tray feeder to the Jenkins screen, of the

balanced reciprocating type, 24 ft. in overall length and 2 ft. 4½ in. wide, in two trays, screening into four grades. The rated capacity of the plant is 10 tons per hour and the total bunker capacity is 40 tons. A general arrangement of the coke plant is given in Fig. 2.

As the time for start-up of the plant drew near, an investigation into the existing conditions at Bude was made. The major portion of the load occurred between the hours of 6 a.m. and 2 p.m. when up to 70% to 75% of the day's send-out had to be met. Send-outs were of the order of 130,000 to 150,000 cu.ft. per day with a maximum hourly demand up to that time of 25,000 cu.ft. Holder capacity was 56,000 cu.ft. of coal gas, with 16,000 cu.ft. of carburetted water gas. Prior to commissioning the I.V.C.O.s the gasmaking plant

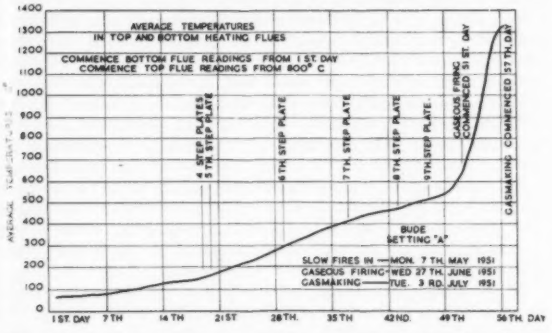
AVERAGE TEMPERATURES IN TOP AND BOTTOM HEATING FLUES
COMMENCE BOTTOM FLUE READINGS FROM 1 ST. DAY
COMMENCE TOP FLUE READINGS FROM 800° C
4 STEP PLATES 5 TH STEP PLATE
6TH STEP PLATE
7TH STEP PLATE
8TH STEP PLATE
9TH STEP PLATE
GASEOUS FIRING COMMENCED 51 ST. DAY
GASMAKING COMMENCED 57 TH. DAY
BUDE SETTING "A"
SLOW FIRES IN — MON. 7 TH. MAY 1951
GASEOUS FIRING — WED 27 TH. JUNE 1951
GASMAKING — TUE. 3 RD. JULY 1951
1 ST. DAY 7 TH 14 TH 21 ST 28 TH. 35 TH 42 ND. 49 TH 56 TH. DAY

Fig. 3. Typical heating-up curve for one of the chambers.

was hand charged stop end horizontals and C.W.G., the general procedure being to keep the horizontals on a steady output of 3,500 cu.ft. per hour and to use the C.W.G. plant strategically at its rated 10,000 cu.ft. per hour. No water gas was made during the night shift.

Once the I.V.C.O.s began gasmaking, it was hoped that C.W.G. manufacture would largely cease and that the plant would be sufficiently flexible to meet all variations in stock and send out, while still maintaining the correct calorific value. In view of the large size of chamber installed, this was a problem of no small order.

The nominal maximum output from a 2.3 tons chamber is of the order of 60,000 cu.ft. per day, independent of calorific value. The smaller 1.4 tons chamber, with a nominal maximum yield of 35,000 cu.ft. per day, would have been much

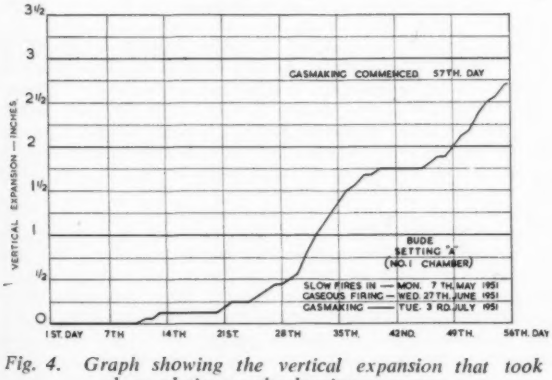
VERTICAL EXPANSION — INCHES.
GASMAKING COMMENCED 57TH. DAY
BUDE SETTING "A" (NO.1 CHAMBER)
SLOW FIRES IN — MON. 7 TH. MAY 1951
GASEOUS FIRING — WED. 27 TH. JUNE 1951
GASMAKING — TUE. 3 RD. JULY 1951
1 ST. DAY 7TH 14 TH 21 ST. 28 TH 35 TH. 42 ND. 49 TH. 56 TH. DAY

Fig. 4. Graph showing the vertical expansion that took place relative to the heating-up curve.

more suitable for the Bude load and would have placed much more flexibility in the operators' hands. However, the events that took place in 1948-49 had meant the installation of the larger chamber and the problem had to be resolved. Obviously, the load was hardly sufficient for three chambers and, equally obviously, there would be no need to have the whole eight chambers under heat.

It was obvious that steady schedule conditions would be difficult to obtain. The high chamber capacity made it necessary to ensure that, before a new charge was placed, there was adequate storage capacity to meet the first 'rush' of gas, combined with sufficient ultimate storage and load to ensure that the holder would not blow. This was of particular interest during the afternoon and evening period, when the load tailed off quite sharply. Ultimately, with the active co-operation of the Board's personnel, a reasonably steady 24-hour charging schedule was arrived at. The fact was faced that holder stock would have to be brought down to the barest minimum during the afternoon and evening, probably down to the last sheet, before placing the final charge for the day. This would then take care of the small load and would ensure a rising holder to give full conditions for the next morning's load, without blowing.

Heating Up and Start-up

Slow fires were put into all the producers on May 7, 1951. The gaseous firing stage was reached on June 27 and gas-making began on July 3, 1951.

A graph showing a typical heating up curve for one chamber is shown in Fig. 3. Fig. 4 shows the vertical expansion that took place, relative to the heating up curve. Transverse expansion is also checked to ensure this is complete and that space allowed for expansion during the heating up period is completely closed up.

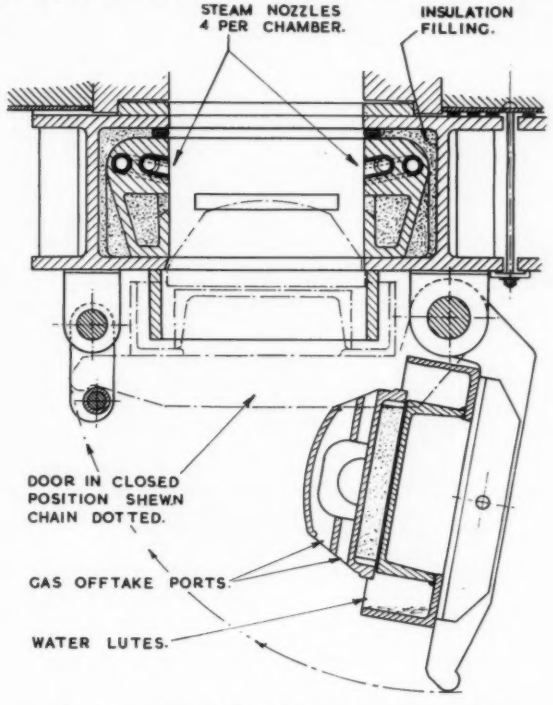

Fig. 5. Details of the bottom door construction.

Once the four settings had reached gaseous firing temperature, chambers 1 to 4 were charged, while chambers 5 to 8 were let down. A 24-hour schedule, utilizing three charges, met the load and stock conditions quite well, with one chamber always standing empty against an unexpected rise in load conditions. The method of charging was by 'leap-frogging'. The chamber standing empty would be charged, while the chamber due for discharge would be emptied and left with breeze protection pads on the bottom doors until the next charge was due. In this way, no chamber stood longer than eight hours in an empty condition.

Such a charging system must inevitably lead to high producer coke consumption. Were the load such that four chambers could have been brought into regular schedule the figures would have shown an improvement, but generally the results can be taken as indicative of the operational difficulties caused in meeting a small, fluctuating load with large carbonizing units.

Changes Since Start-up

Since the Bude plant was started up, the Board has had a new boiler built. As a result, the load is now met on two chambers only and the two other chambers have been let

down. A 16-hour charging schedule is worked, giving the requisite three charges per 24 hours. The method has been in operation since October, 1954, and results indicate that overall improvements have been effected.

One advantage of a vertical chamber or retort system has been the ability to make water gas *in situ*, diluting the coal gas to the required C.V. In practice, it is found that this feature is largely dependent on the type of coal to be carbonized. In some cases we find it quite practicable and simple to steam the gas down to as low as 430 B.Th.U. per cu.ft., maintaining a surprisingly good steam dissocation figure. In others, the coal has a big after-shrinkage figure and steaming becomes difficult. The coke mass shrinks away from the chamber walls, leaving a free space for steam travel. The water gas make is low and would seem to be due as much to reaction with scurf as with the coke mass.

These conditions were met with the coal being carbonized at Bude. The long charging schedule meant that a long steaming period would be used and a relatively low rate of steam

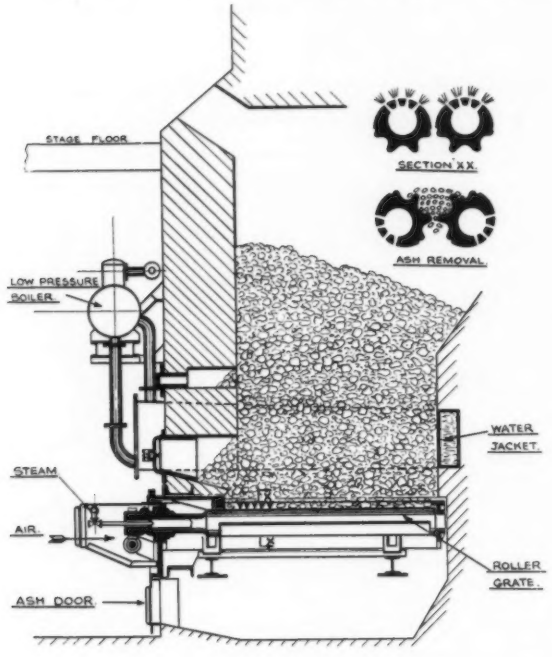

Fig. 6. Constructional details of the internal producer.

admission would be used also. On paper, this appears an ideal condition, but events proved otherwise and additional means of dilution were sought.

The Board decided to utilize producer gas dilution to assist C.V. control. The producers were of adequate capacity. The first attempt made was to extract producer gas via the dust pocket but ultimately the gas was drawn from the front wall of the producer and a satisfactory system installed. The maximum possible quantity is drawn in during the period of high C.V. and this amount is then steadily reduced at set intervals until the next charging period. Much of the violent C.V. fluctuation on the make gas has been damped out, although the line still shows quite a wide C.V. range. The criterion is, however, the exit gas line from the holder. It is found that the fluctuations have vanished through mixing, the town gas line being very steady and showing little deviation from the statutory C.V.

(Mr. Miller discussed the problem of sampling the producer gas with quotations from the 32nd Report of the Joint Research Committee on the Croydon I.V.C.O. installation.)

Quenching

A charge frequently laid against I.V.C.O.s is that they are dirty in comparison with other forms of vertical carbonization. There *is* smoke emission during charging and discharging operations but it is of very brief duration. However, as was pointed out by R. W. Crowther in his paper, 'I.V.C.O.s, Past, Present and Future',* this can probably be overcome by the installation of a 'closed' system of charging and may represent the future trend for this type of plant. The other feature is that of the steam 'plume' from the quenching tower during quenching operations. Again, it is of short duration, but the tonnage of steam is quite high and gives rise to an appreciable velocity up the tower. It is found that this causes the steam to entrain coke fliers which are ultimately deposited outside the plant.

This problem had been tackled before, with the co-operation of the South Western Gas Board, and was tackled again at Bude. The cross-sectional area of the tower was increased above that used on previous similar installations, to reduce steam velocity and, in addition, a quenching hood was installed. The quench sprays were mounted inside a hood which was lowered over the hot coke bus as it stood in the quenching chamber. The main feed to the sprays was by a flexible connection from the quench water supply. This hood was most efficacious in reducing flier emission and also tended to give even more effective quenching by causing the steam generated to circulate through the hot coke mass before ascending the tower. Its use was ultimately abandoned for maintenance reasons. However, by using alternative materials of construction, a hood giving good service can probably be developed. This is being done on a new I.V.C.O. installation where a hood is being made of an aluminium framework cloaked in stout asbestos cloth.

A question quite frequently asked is, 'Why a wet-sealed door and not a dry one?' and the answer is, quite simply, 'We like it.' It will be readily appreciated that the discharge door of an I.V.C.O. is the focal point concerning life of the chamber. Brickwork distorts with door distortion. This is why it is of primary importance to remove the newly discharged hot coke from under the chamber as quickly as possible. The wet door has certain advantages. It is always cool and, therefore, less prone to distortion from heat from below. Maintenance on the door is light and working lives of 15 years and upwards are met. A simple, manual, door operating gear is used with which troubles are most infrequent. It has been suggested that the supporting steelwork for the door may suffer from corrosive attack, largely due to the use of a water seal. This point has been overcome by the use of copper bearing steels, which withstand the conditions adequately. Details of the bottom door construction are given in Fig. 5, which shows the water butes and the positions of the steam nozzles.

Internal Producers

Another point made by R. W. Crowther in his paper on I.V.C.O.s was that, as far as this system is concerned, the highest thermal efficiency is obtained with the combination of internal producer, recuperator and/or waste heat boiler. Efficient external producers have many attractions over the internal producer, but the fact remains that the producer integral with the setting has the advantage as far as highest thermal efficiency is concerned.

If, however, the advantages of mechanization can be applied to the internal producer, then this represents a forward step. Such a producer has now worked successfully for more than a year in a works of the North Eastern Gas Board. Constructional details are given in Fig. 6. Ash is extracted by the teeth on the rollers, operation is intermittent and governed by the particular clinker conditions, while a water jacket provides either low pressure steam or a hot water supply for boiler feed and/or other works purposes. A comparative test, carried out under normal working conditions, gave a saving of 2.3% (actual), on the coke to producers—*i.e.*, a comparative saving against step grates of 13.8%. Much of the reduction came from the decreased carbon content of the ash extracted from the producer. All the known advantages of external mechanical producers will apply to an internal one—*e.g.*, fuel economy, improvement in producer gas quality, increased setting life, reduction in flue dust deposits, improved working conditions and increase in heat output. In addition, it will have a higher overall efficiency from the effect of the sensible heat of the hot producer gas and, further, would show capital savings on a corresponding installation.

* 'GAS JOURNAL' May 20, 1953, pp. 431-438.

Natural Gas Search in Italy

Mr. H. Johnston, O.B.E., A.M.I.MECH E., Chief Engineer to the North Eastern Gas Board, has recently paid a visit with other technicians to Northern Italy to study what is being done there in the search for natural gas, the experimental drillings, and the Italians' exploitation and use of the gas they have found. At the request of Dr. R. S. Edwards, Chairman of the North Eastern Gas Board, Mr. Johnston gave the North Eastern Gas Consultative Council a short talk describing what he had seen and learned on this trip in relation to the natural gas exploration experiments being carried out in Yorkshire, Lincolnshire, South Eastern England, and Scotland.

Mr. Johnston, avoiding technicalities, said that already in Italy natural gas was having its effect on the economy of the country which had never had the coal resources this country had enjoyed. 'The Italians indeed,' said Mr. Johnston, 'envied our coal resources, considered we were very richly endowed and were very surprised to learn that we were importing coal.'

Mr. Johnston went on to describe how, in February, 1953, the Italian Government organized what they called the E.N.I. to control Governmental undertakings already in existence for dealing with hydrocarbons. E.N.I. operates, he said, like any other industrial undertaking, and consequently meets with competition from independent companies in this sphere, but enjoys special advantages in the Po Valley and Northern Italy, having secured exclusive rights for prospecting and transporting. Then there is another concern known as A.G.I.P. which organizes research and various commercial matters, including the sale of gas together with the transport and selling of liquid fuel products and cylinders of natural gas and the management of public filling stations. E.N.I. not only controls A.G.I.P., but has considerable shareholdings and control in many other companies, including oil refineries and electricity works and the manufacture of ceramics, fertilizers, etc.

Gasworks Closed Down

Oil and natural gas in economic quantities has been found in the regions of the Po, East Coast, and Sicily, and during the last five years well borings to the number of 350 have been carried out to the total depths of about 400 miles. In 1953 there were 85 borings to total depths of 100 miles, and over 45% of these were brought into production. So far the greatest progress had been achieved in the Po Valley in Northern Italy where they were now producing nearly 500 mill. cu.ft. of natural gas per day, which has a heating value twice that of coal gas. E.N.I. sells gas to both gas undertakings and large industrial consumers and it is widely used by electricity generating stations, tube rolling mills, the cement industry, technical works, and fertilizer manufacturers. The natural gas sold to gas undertakings either replaces or augments gasworks and in two towns visited by Mr. Johnston—Brescia and Verona—gasworks have actually been closed down, natural gas purchased, and distributed to consumers. At Verona, until 1953, the gasworks was operating out-o-date plant, but the transformation into works producing converted natural gas was carried out without particular difficulty. These works distribute natural gas as such through new pipe systems to about 12 industrial firms, and it also converts natural gas of 1,000 C.V. to 500 C.V. through an existing system of mains to domestic consumers.

At Brescia the gasworks was closed down and now all neat natural gas is distributed. They have laid a new ring main with 12 district regulation stations with automatic control from one main station. Burners of all appliances have had to be altered. The natural gas is received at the works at 150 lb. pressure which is then reduced to 50 lb., oil fogged and odorized and reduced again at district stations. The average price charged by E.N.I. is about 4½d. per therm, although the scale of charges provides for variation as between various types of consumer. The heating value of natural gas is twice as high as our manufactured gas. With the use of natural gas the consumption of gas in these Italian regions has risen 500% in five years.

The presence of natural gas on the Italian market has tended to act as a controlling factor in respect to other fuels by inducing them without distinction to enter into lively competition and the result has been a fall in the cost of power which, for many years, was exceptionally high in Italy. The advantages accruing are self-evident. The progress achieved has been accomplished at the expense of coal—mostly imported.

If natural gas were found in Yorkshire how would we deal with it and use it to the best advantage? Experience and practice in America and Italy have established designed plant and guidance in use for particular circumstances. Before decisions are made certain information would have to be acquired—firstly, the quantity of natural gas must be sufficient for economical treatment and transport. This can be assessed. Secondly, to determine treatment at the well head we must know pressure, temperature, volume, composition, water, gasoline, and sulphur content. Knowing the quantity available, a determination would have to be made as to where it was to be used in order to design an economical and safe pipeline system.

Finally we should require to determine whether in any particular case it would be used mixed with other gases, used neat (involving the closing of gasworks) or reformed to a lower calorific value gas. None of these questions can be settled now, nor until gas is found and information on it obtained.

There have been drillings near Beverley and, if economic quantities were found, the Board might construct a high pressure network—York, Hull, and some parts of the West Riding—and it might economically replace or augment existing plant. It would provide a means of independence of coal and, as in Italy, the tendency would be to progress at the expense of coal.

Much of the specialized equipment at the well head and gathering grounds would initially require to be purchased from abroad. For the first few wells packaged equipment would be used. The pipes for high pressure could be purchased in this country but much of the equipment at governor stations would, to start with, probably have to be purchased outside this country.

Enough for 20 Years

The talk was listened to with great interest and at the end Mr. Johnston was asked a few questions. One member asked how long the Italians anticipated the resources of natural gas in the districts where they were working would last, and Mr. Johnston said they had scientifically calculated on at least 20 years. Another member enquired how seriously was the Gas Council considering the use of and search for natural gas. Mr. Johnston said they were considering it very seriously as indeed many other countries were considering it. Yet another member asked if the gas consumption in Italy was as extensive as in this country, enquiring if the demand for gas in this country, being industrial, was much heavier than in Italy and whether in this country we could ever hope to find sufficient natural gas to make it a workable and economic proposition.

Also it was asked if there would be extra difficulties in an industrial and thickly populated country like ours in the transport and piping of this natural gas to our big cities and most populous and built-up areas.

In reply Mr. Johnston said that the gas consumption in Italy was in the past perhaps one tenth of that in this country but Northern Italy was a well built up and populous area and the transport and piping of natural gas presented to the Italians no insurmountable difficulty. If natural gas was found in this country we should have to design the system according to conditions. Whether or not we shall find sufficient natural gas to make it a workable and economic proposition remains to be seen but it would be wise not to be too optimistic. Mr. Johnston said he thought it was a field that had to be, and should be, explored.

The Chairman, Alderman W. Regan, thanked Mr. Johnston for his interesting talk and Alderman Mrs. Smith seconded a vote of thanks which was heartily applauded by the members.

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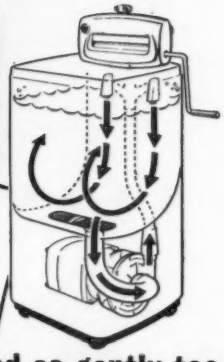

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MIDLAND SECTION ANNUAL MEETING

'Two of the Best Boards'

The annual general meeting of the Midland Section of the Institution of Gas Engineers was held at the Queen's Hotel, Birmingham, on April 22. Mr. A. Allen, Warwickshire Divisional Manager, was inducted to the Chair and gave an interesting address dealing with many aspects of the gas industry. He succeeded Mr. C. C. Wood who presided at the earlier proceedings. Before the meeting members were entertained to luncheon at the invitation of the Chairman and members of the West Midlands Gas Board.

MR. ALLEN proposed the toast of the East and West Midlands Gas Boards. They were honoured, he said, by the presence of the President of the Institution and he assured Mr. Tate that he could rely on the support of every member of the Midland Section. They were working for two of the best gas boards in the country. There could be none better and the members of the Boards were men of wide experience who contributed in a very real sense to the welfare of the industry and its efficient management. Both Mr. Diamond and Mr. S. Smith were men of outstanding personality.

MR. DIAMOND responded in a characteristically humorous vein.

Etruria

MR. SIDNEY SMITH, who also replied, referred to the big development which had been made at the Etruria Works at Stoke which he described as a remarkable example of cleanliness. That was something that had gone on for years and was an achievement in these days of tremendous labour shortage and turnover. It meant that there was a hard core of workers who would not allow the work of years to be spoiled.

MR. W. K. TATE, proposing the Midland Section, offered the greetings of the Council and other members of the Institution and said it was only by the strength and vitality of its 'children' that the Institution could prosper and do its work properly. There were many organizations in the industry but they never had any fear so far as the Midlands were concerned. He did not see how there could be seeing that two such progressive boards were concerned. In those areas in the heart of industrial England, new processes, new uses, new products and increased productivity were a constant theme. He expressed warm appreciation of the support which the Midlands gave to the Benevolent Fund and said the work of the members in that area was second to none. He spoke of the increasing specialization which was the trend to-day and urged that they should base their meetings and discussions on wide and broad lines so that they could preserve their balance. The topic of gas engineering was not the only thing they should consider. They should bring into their deliberations other subjects and contributions that went to make up all the departments that went to form the gas industry.

MR. WOOD, responding, said his experience as district member was that the council worked very hard for the industry and during his year of office he had received much help from all connected with the Institution.

Mr. Wood presided at the outset at the annual meeting. A message of good wishes was sent to Mr. D. K. Green who is in hospital recovering from an operation. It was stated that he is making good progress. In his absence Mr. J. M. Wainwright acted as Secretary.

Officers Elected

The following officers were elected for the year: Chairman, Mr. A. Allen; Immediate Past-Chairman, Mr. C. C. Wood; Senior Vice Chairman, Mr. J. Corrigan; Junior Vice Chairman, Mr. F. L. Atkin; Honorary Secretary, Mr. D. K. Green; Honorary Treasurer, Mr. J. H. Wainwright; Auditors, Dr. M. Barash and Mr. E. N. Farnworth.

MR. H. R. HEMS, presenting the education report, said only a very small number of candidates had entered for the Associate Membership examination and it was too early to make any comment upon standards achieved.

More normal numbers would sit for the examination this year and it would then be possible to assess whether the more stringent preparation resulted in a higher standard of candidate coming forward than had been apparent during the last years of the old Higher Grade examination. There had been a marked fall in the standard of the work put forward in the Inter. Examination Gas Fitting. In 1954 71% of the entrants failed to pass.

As to the Midland District Gas Education Committee there had been insufficient business during the past year to warrant a meeting of the Committee. Liaison had been maintained with the Gas Education Committee through the Chairman and Secretary.

Since the Gas Council had assumed full responsibility for the management courses held annually at Brooklands Technical College the Education Committee was considering the best application for the £500 per annum grant which was made by Woodall-Duckham to help finance the course. It would appear that the money would be spent in some form of educational activity probably in the form of visits by selected students to study various aspects of the industry. Mr. Hems added that he thought the time had come when he should give up this work.

Mr. Allen was inducted to the Chair by Mr. Wood who spoke of his high qualifications and good work for the industry both at Manchester and in his present position.

A presentation of a canteen of cutlery was made to Mr. Wood in recognition of his devoted work during the past year.

MR. CORRIGAN proposed a vote of thanks to Mr. Allen for his Presidential address, and said that by tradition the address of the Chairman was not for discussion, but he thought he would have welcomed the opportunity of debating many of the provocative points that he had raised. It was a most comprehensive statement covering many aspects of the industry, and yet throughout it had one focal theme, 'the future,' and not the 'past.' There were many points to which he would like to refer, but he had only time to select one or two. He was sure that few would disagree with his statement that they had now reached the stage when they could no longer attach blame for deficiencies on their predecessors. They were rapidly approaching a critical testing time, but they believed with confidence that they had the right tools and determination to make a success of the future.

The Chairman's concern as to the recruitment of future potential leaders would be shared, though he felt that no opportunity should be lost in providing adequate facilities, encouragement and training to their younger employees to enable them to develop their personalities and widen their experience.

Smoke and Coke

The Chairman's reasoning on the rapidly changing scene in the carbonization sphere due to the adoption of the Beaver report was interesting. After a generation of advocating the contribution it could make to smoke abatement the industry suddenly found itself, almost overnight, with the problems of implementing its claims. There was both a tremendous challenge and an opportunity before them, and already questions of the availability of coke supplies, quality and service for next winter had presented themselves.

The Chairman's appraisement of the top level sales executive was intentionally contentious, but he was in entire agreement on one point, namely, with the demand for information about market possibilities. Frankly he could not see how a sales policy could be evolved without it. It had been his fortunate experience to be associated during the past few years with the direction of a domestic sales policy founded upon the results of very careful scientific market and economic research. However sceptical they might be of this kind of research and the accuracy of its sampling methods it had proved to be the most effective guide to management in formulating successful sales efforts.

They were all pleased to hear of the progress made with the erection of the hot air turbine at the Foleshill works. They had known of this development for the past few years, and its completion would be awaited with very great interest by all engineers. The Chair-

man had indicated that the financial advantages which might stem from this might be substantial. This, together with the revolutionary developments which had taken place in the past year in the actual carbonization of coal within vertical retorts would surely give added confidence when important decisions of future plant were to be made. He congratulated the Chairman on the varied and thought-provoking address he had presented.

MR. F. L. ATKIN, seconding the vote of thanks, said Mr. Allen came from the North West to the Midlands some 14 or 15 years ago bringing with him that forthrightness which they associated with that part of the country, and which was so evident in the excellent address he had just given.

During the war he was at the Walsall undertaking and was responsible for maintaining gas supplies to an area which played a considerable part in the war effort, and now he had under his direction many important undertakings including that great centre of the motor industry, Coventry, whose exports played such a vital part in the national economy. He realized, perhaps, more than any of them, the necessity for ample supplies of gas at reasonable price, and it seemed to him that that important aspect had influenced his remarks and he was most anxious that the gas industry should flourish on the right lines not only for its own sake but as an important national asset.

He noticed that the index of industrial production in February was 137 compared with 100 in 1948—something like a 37% increase since vesting date. There was no doubt that Coventry and the Midlands had contributed a considerable amount to that increase, and gas had played no little part in its development.

As to the recruitment of staff, Mr. Allen said important posts in the industry were filled by men who had not had the advantage of a University education. No doubt such men would have benefited thereby, but it was questionable whether the industry would have progressed either quicker or better. The problem of attracting even the Grammar school boy was common throughout the engineering industries.

Starting at the Bottom

An important item in the training for management for human relationship, and he suggested that this aspect was more easily assimilated if the prospective student worked side by side with the manual worker. It could be that the success of their present leaders was because they entered the industry direct from school and had the opportunity of appreciating the manual workers' point of view especially in the early days which might otherwise have been spent at the University.

Mr. Allen made an important point when he said that the industry should state more directly the lines of promotion. University students were anxious and enquiring on this point. Hitherto it might appear that the way to the top was through the retort house, and he thought that this conception had a serious effect on the recruitment of the better qualified personnel to the distribution, utilization and chemical side of the industry, which was woefully short of first class men, but it might be pleasing to the industry to note that one of the most recent appointments of deputy-chairman entered the gas industry on the industrial utilization side.

He noticed that the distributing engineer had escaped criticism, whether they were beneath notice or whether they performed their duties in such a manner as to evoke no criticism was an open question. Mr. Allen had many pertinent things to say about the future of the gas making processes, but to the onlooker it certainly was a most curious state of affairs to find that in Britain, whose raw product, coal, was there for the fetching should be compelled to use an imported product for gas manufacture. Those who were on the distribution and utilization side could only 'wonder and gaze upon,' but at any rate they were ready, willing and waiting to transport and sell the gas when they knew from whence it was to come and to where it must go.

As to atomic energy development, he could not see that for some considerable time this would have a serious effect on the gas industry as long as coal prices remained reasonably static. In electrical generation from nuclear reactors the capital charges of the necessary plant to produce the fissible material must be a heavy cost on the energy required to replace the coal, and in any case it must be down graded to make it available to the heat cycle, and whether this took place through the medium of boilers with a liquid phase medium, or direct through a gas turbine, the overall thermal efficiency could not be more than something in the order of 40%.

The necessity for co-operation between technical and accountancy staff had been brought out. Mr. Atkin said he would like to add that the co-operation should be two ways—*i.e.*, not only should the accountant obtain information for his own purpose but the technical staff should be able to obtain from the accountant costs in such a form as would enable him to effect those economies which cost dissection would provide. The accountant should remember that one definition of an engineer was that he would do for 2s. 6d. what any fool could do for 5s. He thought they would all agree that Mr. Allen had given them very much to think about.

Scotland Welcomes Spring

Improved weather in Scotland has brought a welcome respite to the gas industry which has come through the intensely cold winter months with considerable credit. The period has passed practically without need to impose restrictions. That this has been possible is due largely to the well advanced programme of extension and development. The West of Scotland used the new Dumbarton plant to advantage as well as increased water gas production.

Glasgow in particular benefited from this situation since it was here that the impact of cuts was most heavily felt in the period of reconstruction. At present a peak demand for the area is in the region of 57 mill. cu.ft. per day, and this was handled successfuly over the peak periods of the winter. A year previously peak capacity of the then available plant was somewhere in the region of 45 mill. cu.ft. which made cuts inevitable. In the Glasgow area new plant is being erected at Provan which will be developed to relieve Dalmarnock, which has become uneconomic and likely to be reduced and ultimately discarded. By the time this happens the new Provan plant should be in operation to provide a continuous flow of supply. The contribution from the steel and iron industries continues at around 80 mill. cu.ft. of coke oven gas; this should be increased in due course when the new Colvilles, Ltd., plant is in production at Motherwell, but that project is still about two years off. Coal supplies have been well maintained over the period and the general report is that the American and German supplies which have been necessary have been of good gas making quality and have assisted in maintaining services over the severe winter.

Edinburgh Sales Centre

Co-operation between the Scottish Gas Board and the prominent Edinburgh departmental store, Patrick Thompson's of North Bridge, has produced an excellent gas sales centre within the store, probably the first of its type in Scotland. The store offers immense daily traffic, excellent location, and interested shoppers, all making it possible and profitable to put over the gas story. The unit occupies a useful position encircling a main stairway, so that all the traffic using the stairway must see the display. A bold pelmet links up the section and declares 'Gas Appliances Make Life Easier for Everyone' and this is used with the support of Mr. Therm, and with appropriate manufacturers' aids. The first display includes the Morley gas-electric washing machine, Electrolux refrigerator, the Merlin gas space heater, a New World cooker, Howarth washing machine, as well as many other items of kitchen equipment from leading makers.

This effort is the more important in that the Electricity Board has established in the same store, in an adjoining area, a competing electricity service centre to demonstrate and sell appliances.

The Northern Gas Board has turned down, as impracticable and uneconomic, a suggestion by Keswick (Cumberland) Urban Council that Keswick gasworks should be closed, and the town supplied with gas from the grid. The Gas Board has pointed out that £40,000 has been spent on Keswick works and to abandon this expenditure and incur the cost of laying a new pipe-line to the town was untenable.

East Midlands Gas Board's Sixth Staff Conference at Skegness

Members and officers of the East Midlands Gas Board, members of the staff, ladies and visitors to a total of over 260 attended the dinner and dance which marked the close of a very full two-day programme at the Board's sixth annual staff conference at Skegness on Friday. The conference opened on Thursday with a civic welcome by Councillor A. Denham, Chairman of the Skegness Urban District Council, and the programme embraced not only the opening addresses of the Chairman and Deputy Chairman and the presentation and discussion of papers by Board officials, but two noteworthy addresses by leaders of the kindred coal and electricity industries.

MR. SYDNEY SMITH, Chairman of the Board, at the outset, referred to the accident at East Retford in March when the District Engineer, Mr. F. Beaumont, lost his life as the result of an explosion. Seven employees were injured, six were detained in hospital, and three were still there, but all were making a good recovery. He asked the gathering to stand in silence for a few moments in memory of Mr. Beaumont.

A Successful Year

The CHAIRMAN, in his opening address, said in many respects the fiscal year just finished had been the most successful in the Board's history. He did not mean to convey that surplus of income over expenditure would compare with previous years; indeed, it was too early to know with certainty, but it was probable that they would do no more than break even. In most activities, however, he was able to report improvements and increases on previous years. These reflected credit on all concerned, and he expressed the Board's appreciation to everyone present, and to all employees throughout the area. Although the year had been successful, it had not been an easy one; as a result of increases in operating costs beyond their control, they were compelled to raise their charges for gas in November last; and costs still continued to rise. This was a matter which was causing them increasing concern. Many of the plans made in the early years after vesting date were now reaching maturity, and their objective of substantial economies in gas manufacture was now being approached.

Over the year, they had reached new record levels for both gas manufactured and gas distributed. In total, gas distributed amounted to some 62,609 mill. cu.ft., representing an increase of 5.8% over the previous year, and an increase of 22% over the first year after vesting date. They manufactured 33,537 mill. cu.ft. in their own works, an increase of 7%. Coal carbonized amounted to 1,720,000 tons, an increase of 4.8%. Therms of gas per ton of coal carbonized were lower at 73.9 by 1.6 therms, but this was to expected because of increases in declared calorific value at many undertakings, in preparation for the intake of bulk supplies of gas; and because thermal yields had been adversely affected by reduced maintenance of manufacturing plant at a number of works closed down during the year and at others due to be closed down in the comparatively near future. During the year, they purchased 29,300 mill. cu.ft. of coke oven gas, an increase of 4.6%, and equivalent to 47% of total gas available.

Capital Expenditure

Substantial capital expenditure was needed to implement their plans for an integrated system of manufacture and distribution. In total, during the year, capital expenditure amounted to some £7 mill. of which about £2,800,000 was spent on manufacturing and ancillary plant, and £4 mill. on gasholders and distribution equipment, including mains. In the six years since vesting date, the Board had expended over £25 mill. on capital projects, the greater part of which had been connected with manufacture and distribution. They had expanded their daily total gas availability by 29.5% since vesting date, and still demands for gas continued rapidly to increase, but they had been able, except in Sheffield, to meet all demands without restriction over the past two years. In Sheffield during three four-day periods of unprecedented demand in January and February this year, when all previous output records were broken, they were compelled drastically to reduce supplies.

Shortages of steel prevented the completion of some projects by the programmed dates; if those delays had not occurred, all demands for gas in Sheffield could have been met this winter without any restriction. Gas available in that area on the maximum days in January and February this year, was 43.5% greater than in the winter of 1949-50; and, in terms of finance 42.7% of their total capital expenditure on gasmaking plant and gasholders since vesting date had gone into the Sheffield and Rotherham Division.

Increased Gas Sales

It was particularly pleasing to record an increase of over 5% in aggregate sales of gas during the year. Sales of gas to domestic consumers were up by over 2%; and, for the first time since 1950-51, the decline in *average* sales per domestic consumer had been checked. Sales to non-domestic consumers increased by 8%. In sales of appliances, they had had a particularly successful year. The total value amounted approximately to £3,775,000 as compared with £2,850,000 last year; an increase of over 30%. In numbers, sales of cookers were up by 11% on last year; water heaters by 110%; washing machines by 74%; washboilers by 13% and refrigerators by 105%.

There were some records they could very well have done without. As at March 31, 1955, their level of costs had risen to 42% greater than at vesting date, and was running at 3.5% above March 31, 1954. The largest single item during the year was the increased cost of gas coal, effective from May 1, 1954, and, when account was taken of the increased prices of coke oven gas resulting therefrom, the total addition to their annual cost of coal amounted to £200,000. Higher freight charges added £120,000 and increases in wages and salaries a further £162,000. Together with increased interest and depreciation charges, and taking into account the impact of the back-dated wages award from October, 1953, the grand total of increased costs during the year reached the rate of very nearly £1 mill. per annum.

The Board was therefore compelled to consider a revision of tariffs, which came into operation on November 2, 1954. In doing this, it had two objectives clearly in mind—to make both domestic and non-domestic tariffs more promotional in order to encourage consumption in the lower-priced blocks, and, at the same time, to assist the appliance-sales campaigns by demonstrating to domestic consumers that appliances installed additional to a cooker would, in almost every case, qualify for a reduced price of gas; and secondly, to increase revenue to the extent of £500,000 per annum. In other words they passed on to consumers only one half of their increased costs, and took the remaining half on the chin.

Unfortunately the sad story of increased costs continued and it was doubtful whether they could cover more than a small proportion of the increases with which they were likely to be faced during the current year; and it looked as if the time was rapidly approaching when it would be necessary again to revise tariffs.

Shortage of Labour

Except for seasonal peaks, the total number of persons in the Board's employ remained fairly constant throughout the year at around 11,300. Within this overall total, however, there had been a gradual reduction in the number of persons employed on manufacture, and a corresponding increase in the numbers engaged on distribution and consumer service. A general shortage of labour, particularly of gas fitters, unskilled workers and certain technical staff, continued to handicap development and brought in its train the attendant difficulties of high rates of labour-turnover, problems of maintaining discipline, wastage of training time, and so on. This was a problem they could not wholly solve by themselves, but good management and reasonable working conditions would go some way to retain those who joined their employ.

The most important new training development has been the introduction of

The stars of today . . .

Eunice Gayson as she appears in the role of Penny Henson, pretty air stewardess with whom stars Robert Beatty and Anthony Steel are both in love, in "OUT OF THE CLOUDS." An Ealing Studios Production directed by Basil Dearden.

. . . are constantly in the Public eye. Delightful Eunice Gayson is now featuring in the currently released film "Out of the Clouds"—the 'Century' cooker features in thousands of modern kitchens throughout the British Isles. The pre-eminence of both these stars, in their widely differing fields, is sustained by their superlative and individual qualities — qualities which particularly equip them for their respective roles in contemporary life.

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- ★ One piece double platerack is removable
- ★ Used oven heat vented in front of backplate—heats platerack and avoids wall discoloration
- ★ Four fast-boiling hotplate burners
- ★ Large quick-heating grill
- ★ Boiling burner taps have fixed stop for simmering heat
- ★ All taps are "push-in" safety type
- ★ Roomy oven with Mainstat heat control
- ★ Oven easy to clean—rounded corners and removable fittings
- ★ Drop-type oven door
- ★ Whole of oven space is available for cooking—the base being especially suitable for slow cooking
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CENTURY

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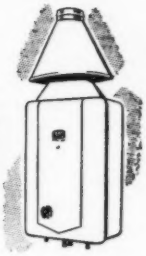

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for a complete household service . . . the G.L.C. Circulator

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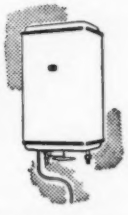

storage for the sink or lavatory basin . . . the Thermain No. 2

MAIN WATER HEATERS Ltd.
Gothic Works, Thornton Rd. Croydon Surrey
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residential information courses of a fortnight's duration for district managers and others primarily concerned with consumer service. Over 50 managers attended and the development had been well worth while. The courses had dealt almost exclusively with the Board's own domestic policies, practices, and procedures, but with the accent on consumer-service; and the benefits had been so apparent that they intended in the autumn to introduce a further series, probably of one week's duration, for all other persons holding managerial positions in the organization. Arrangements had been developed for interchange visits of staff between departments and undertakings, with the idea of enabling all employees to obtain a proper picture of the other man's job and of seeing how their own work contributed to the effectiveness of the organization as a whole.

On the medical side, both management and employees were beginning to derive appreciable benefit from the availability of their own medical service which was being developed by the medical department set up a little over a year ago. An assistant medical officer had been appointed and had taken up his position at Sheffield and would cover the northern part of the area.

'There are still many problems to be faced,' concluded Mr. Smith. 'We must intensify our efforts to keep down costs, and to raise our standards of production even where these are already high. Output per employee is a cogent factor, but we are assured of the active support of all the trade unions in our efforts to improve efficiency. We have made considerable progress in our service to consumers but, here again, there is room for further improvement. We are still in process of building an efficient machine of management; and the future success of that machine depends very largely on the ability of everyone concerned with management, from our foremen upwards, to apply lubrication where it is necessary, so that all parts of the machine are able to work in proper co-ordination and with maximum efficiency. With the continued co-operation and loyal support of you all, which I know the Board can expect, we shall solve our future problems as successfully as we have solved others in the past.'

Common Services in a Public Corporation

MR. J. LATHAM, C.B.E., Financial Member of the National Coal Board, afterwards addressed the conference on 'Common Services in a Public Corporation.' The Fleck Report, he said, was a document of considerable importance, since it was the first published report of a full independent examination of the organization of one of the big nationalised industries. The Board had announced its acceptance of most of the recommendations in the Report, including some relating to common services.

Some objects which were sought to be achieved by the provision of common services were to avoid duplication, to ensure the economies of large-scale operation, and to make the best use of specialized knowledge. It had been said that well arranged common services 'reduce costs, raise standards, polish experts, perfect methods, increase the pace, exploit outstanding talents to the full, and make the very most of specialized professional prides.' In determining the nature and extent of the common services to be provided, the governing factors in some cases could be assessed with confidence and a fair degree of accuracy; they usually related to savings in operating costs, such as the economies to be derived from centralizing the transport or accounting services. There were considerations such as the advantages to be derived from a common buying service, which tended to relate more to the results to be achieved than to cheaper operating costs, and there were general considerations, particularly those resulting from human qualities and the interplay of human beings with varying personalities and characters.

There had been a slow but continuous expansion of common services in the National Coal Board's organization, both in the provision of services to all departments at a particlar level and in the development of area services to collieries and other units. This expansion would be expected to continue, since the heavy tasks before the industry would call for the installation of more and more effective common services. Examples which he quoted showed that the Board adopted the view that questions of common services should be determined on the merits of individual cases, without rigid principles or rules.

The Fleck Committee had emphasized, in several cases, the need to strengthen and develop common services, and had indicated the importance it attached to strong and effective services. Common services often provided difficult problems of acountability. How could the efficiency of the service be assessed and those in charge held to account for their expenditure in relation to the value of their product? It must be recognized that, because of dividend responsibilities, common services might increase the difficulties of holding individuals firmly to account. It had been seen that the benefits the services were seeking to provide were often in terms of quality of work rather than results which could be evaluated in money. Sometimes assessments of benefits might be made fairly simply, but in other cases, general management had to rely on sound judgment in taking a view about the service.

He believed it was important that when considering the introduction or development of common services, managements should consider not only the direct effects, but also broader considerations of morale and other human factors which were vital to vigour and initiative in large-scale administration. But once a service was introduced, it should be used effectively; if there were doubts about enforcing its use, it was better not to have the service at all.

Complementary Competition—an Electricity Glance at Gas

MR. C. R. KING, C.B.E., Chairman of the East Midlands Electricity Board, gave an address at the final session on 'Complementary Competition—an Electricity Glance at Gas.' He said he had nothing but friendly feelings towards the gas industry, in which he had many personal friends, and he believed that the two industries could work amicably side by side in a sense complementary to each other.

Competition had always existed between gas and electricity, and he felt it was an excellent thing for the consumers that it should continue to exist, even though both bodies were now nationalised undertakings and both were controlled by the Minister of Fuel and Power. With the passing of the years the form of competition had varied. He remembered in the early 1920's having to fight hard to get street lighting contracts for electricity and having to meet the fiercest competition from gas undertakings who in many cases were able to quote terms which on the face of it at any rate appeared to be much cheaper than electricity. He could even remember when gas engines were a serious form of competition and how difficult it was to persuade an industrial consumer in the early 1920's to replace a gas engine with an electric motor. Without being unfair he thought it would be almost correct to say that there was little or no competition in those two fields today.

Rivalry in the Domestic Field

It was when they came to the domestic consumer that their rivalry became more acute. He thought it would be fair to say that their field of competitive endeavour nowadays was largely confined to the kitchen of the home and the comparative merits of gas or electricity for cooking purposes. 'I believe, I always have believed, that you have certain advantages in gas cooking that we do not enjoy in electric cooking. I believe, too, that we have some advantages compared with you, but on balance, and so long as our prices remain comparatively speaking what they are today, you will continue to get the lion's share of the domestic cooking business.'

When the East Midlands Gas Board was first constituted he spent a very interesting day with Mr. Henry Jones and their present Chairman, Mr. Sydney Smith, discussing in a broad sort of way

the policies which they were going to inaugurate in their respective industries. Mr. Jones told him quite frankly that at that time 75% of the consumers in the East Midlands were cooking by gas, and something less than 25% by electricity. He further told him that it was essential for the economic stability of the gas industry that that percentage should be maintained, and he thought he could say in all sincerity that it had been maintained.

'I do not want you to run away with the idea that we do not want domestic cooking by electricity. We most certainly do, and in these days when it is costing anything between £50 and £90 per house to provide supplies of electricity it is vitally necessary that we should get from the consumer something more than lighting, radio, television, and occasional heating. We need a fair proportion of the electric cooking load, but it might embarrass us if we got too much. In point of fact we are now living in days of embarrassment because the uses of electricity in the home have been expanded at a much greater rate than we have been able to deal with satisfactorily. The reinforcement of our network of lines and cables is a constant problem, and although we are spending at least £1,500,000 per annum we are still not giving an entirely satisfactory service, particularly in some of the rural areas which, during the past seven years, have become urban in character. If electricity suddenly overnight became very much cheaper than gas, and thousands of consumers suddenly decided to replace gas cookers by electric cookers, we should be placed in an impossible position, and I am glad to say, therefore, that there is not much chance of that happening, and I welcome the strenuous efforts which you and your staff make to maintain your domestic cooking load, and I welcome still further the effect which it has on the members of my own staff in keeping them on their toes.'

That brought him to advertising, a matter which was the subject of discussions between Mr. Henry Jones as Deputy Chairman of the Gas Council, and his own Deputy Chairman, Sir Henry Self. Both industries had been handicapped during these post-war years by the restrictions placed on them by the Minister of Fuel and Power. A year or so ago those restrictions were partially lifted and that seemed to be the signal for an all out campaign on advertising by the gas industry.

It was not so with the electricity boards, however, most of whose advertising was done through E.D.A., an organization controlled by the area boards and the Central Authority. He had seen figures which showed a marked difference between the amount of money spent on advertising by the electricity supply industry as compared with gas, but here again he understood and appreciated that difference. The uses of gas were tending to diminish, while the uses of electricity were tending to increase. It was important that gas should maintain and improve its load in those spheres where it could satisfactorily compete with electricity, notably the home. It followed, therefore, that to maintain its position gas must spend more on advertising and propaganda than electricity needed to spend in order to market its product. It would seem, therefore, that to talk of imposing a similar 'ceiling' on the advertising of both gas and electricity would be unfair to the gas industry, and he for one had not hesitated to say so when such matters were discussed with his colleagues. He hoped that some satisfactory formula, satisfactory to the Minister, would be evolved and then they would all be free to do whatever they thought necessary in the way of advertising their product. But he hoped they would never get back to the bad old days when either attacked the product of the other.

Service Centres

The East Midlands Electricity Board inherited relatively few service centres compared with other area boards. Service centres operated by the Board in an area of 6,750 sq. miles numbered only 57 compared with 147 operated by the Eastern Electricity Board in approximately the same area. He had felt that to some extent service centres were a luxury the industry could ill afford. It was striking that when they visited the south of England where a town only had to have about 6,000 inhabitants to be a place of importance, they had many more service centres than in the Midlands and the north, where they had numerous urban districts with populations of between 20,000 and 30,000. A service centre cost at least £5,000 a year, and as it was not the policy of the Board to sell apparatus in competition with electrical contractors the amount which they would recover from sales to consumers was relatively small.

Looking to the future, first from the electricity angle, we were on the brink of the atomic age and there was already talk of the atomic power stations which would be feeding into the grid very soon. As he understood it, however, the cost of atomic energy and the raw materials which would take the place of coal was something approaching twice the cost of the present coal-fired generating stations. It looked therefore as though coal would only have atomic power as a future competitor and that, as the gap between costs was so wide, there might be some inducement to the Coal Board to put up their prices in order to line up more closely with the cost of uranium and the atomic power stations. The East Midlands, principally because of the River Trent, had been chosen as a site for numerous generating stations which through the grid would supply electricity to the rest of the country.

The Future of Gas

What of the future of gas? They were spending a lot of money on the search for natural gas but there was still some doubt as to whether they would find sufficient to justify further expenditure in collecting and distributing those supplies. But who could tell what the future might hold? New York was supplied with gas from Texas over 1,800 miles away, and if the quantities discovered in this country were adequate there was no reason why they should not have a cheap and abundant supply in the years to come.

Although they had had more or less to give up attempting to compete with electricity for lighting or for ordinary motive power, there were many industries which could not function without substantial supplies of gas, and the industry still had a tremendous field for expansion and development in the home. In wishing the Gas Board success Mr. King said he hoped they would never have anything but friendly feelings for their electricity competitors. 'So long as I occupy the position which I hold at the moment, I can assure you that you will never be able to accuse us of any unfair competition. But competition itself gives life to both our industries, and I hope it will survive despite the efforts of certain Members of Parliament who are always pressing the Minister of Fuel and Power to co-ordinate coal, gas, and electricity.'

Question Time

MR. L. B. CHAPMAN (Skegness) at question time asked: 'It is acknowledged that the aim of selling is to increase consumption per consumer; it is logical therefore to encourage the sale of large-scale commercial equipment, yet this class of apparatus is excluded from the bonus payment scheme; what is the reason for this?'

The CHAIRMAN said the principal reason was that it would be almost impossible to set a target for large-scale equipment of that kind. It was seldom that two installations were of the same type. Conversely in its bonus payment scheme the Board set targets for particular pieces of apparatus. That really was the simple answer to the question, and that was why large-scale equipment was excluded.

MR. E. BATES (Derby) asked: 'Is the Gas Council exploring the possibilities of reducing manufacturing costs by the application of atomic power to gas production?'

The CHAIRMAN replied that atomic power was very much in its infancy, and although Mr. C. R. King, Chairman of the East Midlands Electricity Board, in his address earlier in the conference, had said something about the generation of electricity by atomic power he had also said something about the total cost. The employment of atomic power in the generation of electricity was possible only through the heat from the atomic pile or from the reactors. There was no magical method of generating electricity from atomic power; it was merely by the use of the heat to generate steam, the steam being used in turn to operate the generators and produce the electricity. It was not possible to carbonize coal by the use of steam, and therefore the prospect of making gas by carbonization of coal through

atomic power was something for the very far distant future unless there were some great changes in the practice of the generation of atomic power.

Approach to Local Authorities

MR. S. H. STOKES (Scunthorpe) asked: 'It is not always easy to get in on the ground floor of local authority deliberations in respect of new housing and the availability of gas services appertaining thereto. It would appear that we have a first class line of approach through the representatives of the local public now serving on our consumer councils in acquainting them fully on our marketing procedure and in encouraging them to become ambassadors of the sales side in the course of their public duties. Would you agree that such would be a recognisable procedure?'

The CHAIRMAN said the members of the Consultative Council looked quite well after the interests of the Gas Board. Quite recently one electricity board, not the East Midlands, circularized the local authorities in one part of the East Midlands Gas Board area making claims about the advantages of electricity, its efficiency, and so forth. Members of the Gas Consultative Council in that part of the area were up in arms immediately because they considered it was an unfair action against the Gas Board.

Other Papers

Dr. N. WILLIAMS, Senior Medical Officer, presented a paper on 'Occupational Health'. Before the paper was discussed, a film was shown illustrating methods of artificial respiration. We hope to refer to the paper in a subsequent issue of the 'JOURNAL.'

When the conference was resumed on the Friday morning, MR. E. H. HARMAN, Deputy Chairman of the Board, delivered an opening address on 'Coal—or Oil,' and MR. J. R. KNOTT, Marketing Officer, introduced a paper on 'Marketing.'

After the luncheon break on the Friday, MR. W. BESTWICK, M.B.E., Organization and Methods Officer, presented a paper on 'Organization and Methods in the East Midlands Gas Board.'

Vote of Thanks

The CHAIRMAN, at the close of the conference, thanked the Secretary of the Board, Mr. A. Gwynne Davies; the Deputy Secretary, Mr. Norman Turner, and all those members of the headquarters staff who had put in so much work to make the conference possible. He closed by expressing his own thanks to all present for their interest in the conference and for the enjoyment they had given to those on the platform.

MR. K. L. PEARCE (Derby) moved a vote of thanks to the Chairman and members of the Board for arranging the conference.

MR. BERNARD CLARKE (Lincoln), in seconding, said there was no question that these conferences were well worth while.

The Conference Dinner and Dance

The conference ended with a dinner and dance at the Imperial Cafe, presided over by Mr. Sydney Smith.

The CHAIRMAN, in proposing the toast of the Urban District of Skegness, said Councillor A. Denham, Chairman of the Skegness Urban District Council, was Chairman of the Council's Gas Committee for a total period of eight years prior to vesting date, and during the 19 years in which he had been a member of the Council he had been Chairman of the Council for two periods. His first love for gas was still lively because he was an active member of the Lincolnshire Divisional Committee of the Gas Consultative Council.

Turning to tariffs, the Chairman recalled that at a similar gathering last year he said that having embarked on a policy of trying to hold prices in the face of rising costs the Board was determined to hold the position for a further six months, making 18 months in all. It did so, but in a matter of months its costs for coal, coke oven gas, freights, wages and salaries, and capital charges had risen at the total rate of very nearly £1 mill. a year. Last November it had to increase its charges for gas in order to hold the situation, but it increased them only just enough to bring in half the amount of the annual rate of increased costs; in other words it decided still to continue the policy, so far as it was able, by absorbing the remaining £500,000 within its organization. In recent weeks, however, wages and salaries had risen substantially. They were told to expect a substantial increase in the price of coal in the near future, and so the spiral went on.

Depending on the coal price increase it might well be that their costs might rise again at the rate of over £1 mill. a year, and if that came about there could be only one answer, because they had reached the stage when further economies in operation were becoming more and more difficult to obtain in spite of the splendid efforts of management, staff, and manual employees alike. Until something was done, positively and with intent, to stop the insidious bogey of creeping inflation, which had been going on far too long, they would never be able to control their costs.

COUNCILLOR A. DENHAM, Chairman of the Skegness U.D.C., responded and said he was no stranger to the gas industry, and he recalled with pleasure his close association with Mr. L. B. Chapman and his predecessor, Mr. Young, in the years when the local undertaking belonged to the Council.

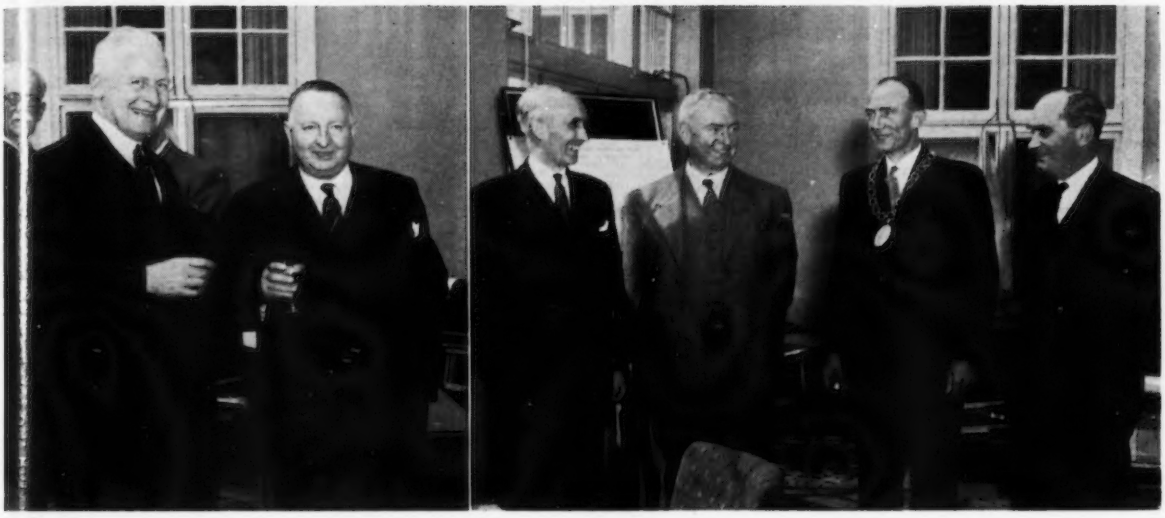
The CHAIRMAN announced the receipt of a telegram from Major-General Sir N. G. Holmes, Chairman of the North Eastern Division, National Coal Board, regretting inability to attend and expressing wishes for a successful evening.

MR. E. H. HARMAN, Deputy Chairman of the Board, proposed the toast of the guests and said that as year succeeded year they looked forward to meeting again those who by their presence and their personal qualities did so much to ensure the success of their assemblies. The principal guest was Mr. Owen Francis, Under Secretary, Ministry of Fuel and Power. Other guests referred to by Mr. Harman were Councillor Denham, Mr. T. W. Kerry (who had retired from the East Midlands Gas Board), Mr. C. R. King (Chairman, East Midlands Electricity Board), and Mrs. King; Mr. P. H. De Keyser (Secretary, East Midlands Electricity Board) and Mrs. P. H. De Keyser; Mr. and Mrs. W. R. Branson, Mr. Clifford King (Managing Director of the 'JOURNAL') and Mrs. King, Dr. W. F. Coxon (*Gas Times*), Mr. A. C. Cross (Deputy Editor, 'JOURNAL'), Colonel and Mrs. Kennington, Mr. G. H. White, Councillor W. H. Foster, Mr. W. Charles, and Councillor W. Albans (Chairmen respectively of the Sheffield and Rotherham, Notts. and Derby, Leicester and Northants, and Lincolnshire Divisional Committees of the Gas Consultative Council); Mr. H. R. F. Hemmings, Area Gas Examiner; Mr. Ivor M. Cule (Clerk of the Skegness U.D.C.), and Mrs. Cule.

MR. OWEN FRANCIS, Under Secretary, Ministry of Fuel and Power, in a humorous response, said he had heard it suggested that if a power station engineer of the early electricity days were placed in a modern power station he would be completely at a loss to know what to do, whereas an early gas engineer would be quite familiar with the operation of a modern gasworks; the reason being that the gas industry 'got it right first time.' The truth was that if the gas industry ever felt it could not make any further improvements it would indeed be a poor look-out for the industry.

When he first encountered the gas industry in the mass—the occasion was the annual meeting of the Institution of Gas Engineers at Bournemouth in 1954—he thought it was wearing a rather worried look, probably because 1952 and 1953 had not been good years for the industry. There had definitely been a slowing down in the upward trend in the demand for gas. But 1954 was a much more encouraging year, and the gas industry was looking forward to the future with super-optimism, particularly from the point of view of the advent of clean air. Support for the clean air policy was so widespread that he thought whichever party took office after the General Election there was reasonable hope that a Clean Air Act would be on the Statute Book this year.

The next Parliament might also hold something else of great interest to the gas industry. During the last few months the present Parliament, after a long period of thought, had appointed a Select Committee on the Nationalised Industries, and the Committee had actually held one meeting. In Ministerial quarters they were agog to know which industry they were likely to take in hand first. Again he thought it was a reasonable prophecy that the new Parliament, of whatever colour, would re-appoint that Select Committee. There was reasonable chance that it would direct its attention to the gas industry.



Mr. D. D. Melvin with Sir Leslie Hollinghurst (Chairman of N.I.F.E.S.) on the left. On the right are Mr. W. M. Gledhill, Colonel J. B. Pringle, Mr. John Ford (President of the Scottish Association), and Mr. W. K. Hutchison (Senior Vice-President of the Institution of Gas Engineers) and Chairman of the South Eastern Gas Board.

Scottish Association Spring Meeting at Peebles

The Spring meeting of the Scottish Association of Gas Managers was held on April 22 in Peebles Hotel Hydro, the President, Mr. John Ford, Inverness, welcoming a large attendance. In his opening remarks he stated that they had just come through a winter which was one of the most severe experienced for many years and their industry had been called on to meet record outputs of gas and coke. In keeping with the highest traditions of their service they had done so, quietly and efficiently. Some of them would be feeling the strain and he hoped that the balmy air of Peebles would prove a tonic to both mind and body.

PROVOST J. P. DUTHIE, Peebles, extending a civic welcome to the members, referred to the long history of Peebles. Its present Charter, dated 1621, outlined the rights and privileges of the citizens and was read by the Town Clerk to the people every June, when the riding of the marches took place and the Beltane Queen was crowned.

The PRESIDENT thanked the Provost for his remarks and, following the intimation of a number of apologies by the Secretary, Mr. W. Kirk, he welcomed Sir Andrew Clow, Chairman of the Scottish Gas Board; Mr. W. K. Hutchison, Senior Vice-President of the Institution of Gas Engineers and Chairman of the South Eastern Gas Board, which was carrying out pioneer work in the large scale production of gas from oil; Sir Leslie Hollinghurst, Chairman of the National Industrial Fuel Efficiency Service; and Messrs. J. S. Smith, E. W. Prior, and J. S. Warrender of the Ministry of Fuel and Power. Also with them was Sir Robert Nimmo, now Chairman of the Consultative Council and part-time Member of the Board.

MR. W. K. HUTCHISON, conveying greetings from the Institution, explained that the President, Mr. W. K. Tate, was unable to be present because of a previous engagement to attend another meeting. In selecting him as a deputy his President had chosen a Scot. The professional status of the Institution never stood higher and the Institution welcomed the support it received from its constituent bodies and from Scotland.

MR. J. S. SMITH said he came with good wishes from the Minister of Fuel and Power. On his last appearance at their meeting he had been told that he had said nothing, although he had spoken! As a civil servant his job was a delicate one. He was something like a rugby referee who had occasionally to blow the whistle! His colleagues and he had come, not to advise, but for education. The standard of the papers read at the Scottish meetings was very high and the discussions were first class. He had been associated with the gas industry for 35 years—a period longer than anyone else and perhaps longer than any civil servant had been associated with one thing—and one thing had struck him. Before nationalisation the local undertakings had been ruled by men who were little kings—men of character, who had to deal with a committee or board of directors. The industry produced people like John Bell, George Braidwood, James Jamieson, David Fulton, in the pre-nationalisation days and he wondered if under nationalisation the same type would be produced.

The PRESIDENT, after thanking Mr. Hutchison and Mr. Smith for their remarks, announced that the Council had decided to award prizes to all students in the Final Part II examinations in Gas Engineering (Manufacture) and Gas Engineering (Supply), whose results showed a reasonable degree of merit. In addition, as the premier award, a medal would be presented to the first student in each of these examinations, should the distinction obtained be sufficiently high. In appreciation of the services rendered by Mr. David Fulton to education in the Scottish gas industry over the past 30 years, these would be known as the 'David Fulton' medals. It was hoped that the first presentation of these medals would be carried out by Mr. Fulton.

It was intimated that the Council had nominated Mr. G. Hannah (New Cumnock), as Junior Vice-President, and Messrs. D. Beavis (Edinburgh) and C. B. S. Mitchell (Kilmarnock), for inclusion in the ballot list for Council vacancies.

The PRESIDENT then gave his Address, which will be found on p. 304.

MR. W. C. CAMPBELL (Paisley), Senior Vice-President, proposing a vote of thanks to the President, said the President had selected subjects on which to address them with care and discrimination, preferring those characterized as evocative of general agreement, avoiding, or so it appeared, those of a provocative nature. The range was wide, covering practically all the matters which were of immediate concern to all of them. He had given his views and opinions on the state of the industry at the present time and it was encouraging that the note throughout was one of optimism, not only regarding present conditions but also for the future. He believed that nationalisation of the gas industry was no longer a question of political ideology. It had been in existence for six years and he found that the change of ownership had been of much benefit to the industry and that the overall position in Scotland was much stronger than it was in 1949. He saw great possibilities in the Clean Air Bill for the extension of

the use of gas coke. However that might be, revolutionary changes in the fuel using habits of the country would be slow. This would be an advantage, giving them time to put their house in order and gain experience in the production of coke in quantity and quality to meet the needs of an extending and more discriminate market.

The President did not envisage the cost of production of electricity being reduced through nuclear energy but he appreciated the advantages of resultant coal saving and the corresponding benefit to coal users generally. However, he drew attention to present-day unfair competition from electricity, which was a matter of immediate concern. What constituted 'unfair' competition was difficult to define and was apt to be a matter of opinion. Their long tradition of more or less flat rate charges made it more difficult for them to understand why the large industrial user of electricity should generally pay a higher average rate per unit than the small domestic user. It seemed paradoxical. Could it be that their attitude to charges required a new direction?

National Fuel Policy

A national fuel policy seemed desirable now and had many advocates but there were those who feared it. Self-interest of contending fuel industries and prejudice would be unavoidable. The gas industry required freedom of action, not dictation—a chance to compete on fair terms and to acquire raw materials at fair prices was enough for them to prove, in the future as in the past, that gas was indispensable to their national welfare. The fantastic prices now charged for their chief raw material—coal—which had apparently not reached their peak, had caused costs to rise to such an extent that compensatory increase of efficiency of gas production could only go part of the way to balance the burden. Efforts to improve efficiency and reduce costs had been successful in many places and the closure of many small works had also contributed to a marked extent, yet these benefits had been stultified and their competitive position worsened through the rapid advance of coal prices. The President also drew attention to the semi-static position of the total consumption of gas for all purposes and advocated an all-out campaign to increase sales, so to improve load factors and reduce production costs. Information now in their hands showed that the Gas Council and the Scottish Board were fully alive to this and an advertising campaign had been launched. Domestic appliances were to be made available on simple hire. The price of gas in Inverness reflected low production costs and some of them would have liked information from the President on that subject. The paper expressed definite opinions, a thoughtful outlook, and complete faith in the future wellbeing of the industry.

MR. W. M. GLEDHILL, Stirling, Junior Vice-President, seconding the vote of thanks, said the President's address might have been entitled 'Current Affairs', particularly with reference to nuclear energy and electrical competition. One visualized Mr. Ford in his Northern outpost being gradually surrounded by increasing numbers of hydro-electric stations with which he had successfully competed over many years. 'Can we hope,' Mr. Gledhill asked, 'that our area gas tariffs will be made more flexible for certain loads in the light of experience gained from their general application during the financial year just ended?'

A year ago, when thanking his predecessor in office for his Address, the President disagreed with the idea of a national fuel policy but today it was to his credit and honesty of purpose that he supported such a policy, which, of necessity, was allied to the requirements of the Clean Air Bill. It was now a fact that as a smokeless fuel industry increased supplies of coal were promised for carbonization in gasworks, to provide additional coke for the domestic market. As Mr. Ford suggested, they had to accept that opportunity, and stimulate demand by preparing and marketing coke in an efficient and attractive manner.

The President's reference to the former policy of providing gas appliances on simple hire was of particular interest, since the Board had recently introduced a hire policy covering gas cookers, water heaters, and wash boilers, to mitigate cases of hardship which might result from the effects of the Hire Purchase and Credit Sale Control Order. That action should encourage them in their efforts to meet competition, keep faith with public demand, and so ensure the progress and prosperity of the gas industry. The President was rightly concerned about their Press relations and one was tempted to wonder if the public and the Press were really aware of the functions and purposes of the Gas Consultative Council and the divisional committees whose principal object was to safeguard consumers' interests. The address had been most refreshing and stimulating.

Chairman of N.I.F.E.S.

At the luncheon which followed the meeting the toast of the gas industry was proposed by Sir Leslie Hollinghurst, who thanked the President for inviting a mere Englishman to propose such a toast. It was appropriate that it should be proposed on Scottish soil for William Murdoch, generally recognized as the father of the industry, was a Lowland Scot. Like many others, he left his native soil and gave England the benefit of his inventive genius. It was Murdoch who first made practical use of gas as a means of lighting in his home in Redruth, Cornwall. He was by no means the last Scot to figure in the history of the industry.

The gas industry could look back 150 years and during that time it had gone from strength to strength. Thanks to the skill of its technologists it had been able to adapt its services to the changing pattern of civilized life. It began as a supplier of light but developed as a supplier of heat, and there were few processes, in the home or in industry, calling for heat which could not be supplied by gas. Evidence of Mr. Therm's lively and progressive outlook was seen in the record total of 12,500,000 consumers, with gas being used in some 4,000 trades and industries. The gas industry's claim to make the most efficient use of the nation's coal—and as Chairman of N.I.F.E.S. he had an interest in the matter—was well-founded. Preserving some 70% to 80% of the potential energy in the 27 mill. tons of coal it carbonized yearly, the industry set an example of efficiency, producing not only gas and coke but indispensable by-products forming the raw materials, for thousands of everyday articles. Murdoch could never have foreseen the day when whole industries would be built up on the derivatives of coal—plastics, aniline dyes, drugs, chemicals, paints, and many other things. A useful and necessary task for the gas industry was to help to clear cities of the smoke and soot which did so much harm to health and to property. The Beaver Report said that smog cost the country £250 mill. annually. Smog was the visible evidence that our diminishing stocks of coal were still being wasted. The nation's conscience had been stirred on the subject and he knew the gas industry would help to solve the problem.

Gas Council Collaboration

The Gas Council was one of the sponsors of N.I.F.E.S. and they were trying to develop collaboration between N.I.F.E.S. and the gas industry. Each had its own technologists, but each organization was at the service of the other. They wanted to collaborate, not to compete; to supplement, not to supplant. He asked for the help of the Scottish Association, now in its 94th year and showing every sign of becoming an active centenarian.

MR. W. K. HUTCHISON, replying, said the industry was facing problems of rising costs and they were hemmed in by competition from all sides, electricity, the atomic threat, oil, imported and processed here in large quantities. They had never been a sheltered industry. They had always aimed at giving service. Any service they gave which cost nothing was welcome—if they gave a cooker out for nothing or sold below production cost they were doing a public service! They had been called the Cinderella of the public services but, in reality, they were the fairy godmother, expected to make good gas out of poor coal. They were prepared to do anything provided they got the right price. In spite of everything they were not despondent. With careful management they believed in their industry, which turned smoky fuel into a smokeless one which burned with a higher efficiency. One freedom they looked for was that they should not be indefinitely tied to the production of coke and gas in fixed ratios. Some of them wanted to make gas without coal. His own Board was interested in making gas from oil. Alternative methods of gas making were of great importance and it was a question the industry would have to study with great energy.

MR. R. COWIE, Hawick, proposed the toast of the guests, PROVOST DUTHIE replying, and MR. SAM HALL proposed the health of the President.

Eastern Road Tar Conference

The gas industry's important contribution to better roads was much in evidence at Cambridge on April 27, when the Eastern Section of the British Road Tar Association—formerly the Eastern Tar Board—held a conference with surveyors and highway engineers. Mr. J. Hunter-Rioch, General Manager of the Cambridge Division of the Eastern Gas Board, presided at a luncheon at the University Arms Hotel, followed by an afternoon session, and among the principal guests was Sir John Stephenson, Chairman of the Eastern Gas Board and Deputy Chairman of the Prince Regent Tar Co., Ltd. Mr. Hunter-Rioch was supported by three of the other four Divisional General Managers in the Eastern Area—Mr. W. J. Collins Garrard, Mr. R. A. Weston and Mr. T. C. Battersby, as well as by Mr. J. Davidson Pratt and Mr. D. M. MacCormack, Chairman and Secretary of the British Road Tar Association; Mr. A. K. Richards, Eastern Divisional Road Engineer, Ministry of Transport, the County Surveyors of Bedfordshire, Rutland, Norfolk, Cambridge, West Suffolk, and Hertfordshire, the City Engineers of Cambridge, Norwich, and Peterborough, and the Borough Surveyor of Ipswich.

Apologies for absence were received from Mr. W. K. Hutchison (President of the B.R.T.A., Vice-President of the Institution of Gas Engineers, and Chairman of the South Eastern Gas Board), Major A. G. Saunders (Chairman, Prince Regent Tar Co., Ltd.), Mr. Brendan Robinson, and Mr. J. H. Dyde (Deputy Chairman, Eastern Gas Board).

MR. HUNTER-RIOCH said they had departed slightly from their usual programme in two ways. They moved the date from the autumn to the spring, because they felt they ought to have their discussion on the eve of the tar season, rather than at the end of it, so that surveyors could have the opportunity of hearing of the latest developments. The other departure was that they were confining their meeting to a luncheon and technical session rather than having a visit to a place of interest.

MR. J. DAVIDSON PRATT, who proposed the only toast, that of the guests, thanked the Chairman for initiating and stimulating interest in these annual meetings with surveyors, and said he wished his colleagues in other parts of the country would follow his example. Speaking on behalf of the B.R.T.A. he was pleased to see so many surveyors who, during the war and post-war years when money had been scarce, had done a magnificent job in keeping the surfaces of the roads in the condition they had done. The B.R.T.A. was co-operating with the Road Research Laboratory in research and experimental work and would always welcome criticism from those whose duty it was to maintain and improve our roads.

MR. T. V. BURROWS, City Engineer and Surveyor, Cambridge, responded and welcomed the Association to Cambridge.

After lunch, the Gas Council film, 'The Nation's Wealth,' was shown.

The subject of 'Dense Tar Surfacing' was introduced by Mr. E. J. Dickinson (B.R.T.A.) and Mr. E. W. Hinchley (Midland Tar Distillers, Ltd.), and 'Surface Dressing and Wetting Agents' was the subject of a short paper by Mr. H. C. Hitchcock (Prince Regent Tar Co., Ltd.).

MR. DICKINSON said dense tar surfacing was developed by the Road Research Laboratory on the basis of laboratory mechanical tests. By systematic testing of a range of compositions the proportions of the constituents required to give maximum resistance to deformation were evaluated. The composition with maximum resistance to deformation was found to correspond to the condition of maximum density where the voids in the compacted aggregate were just filled with binder. Practical considerations of the workability and ease of compaction of the material dictated limits to the proportions of the different sizes of aggregate. For example, no more filler was used than was necessary to fill the voids in the compacted fine aggregate with the filler-tar mixture of maximum resistance to deformation and the stone content was limited to between 30% and 55% by weight of the final mixture.

The commercial development of D.T.S. had been undertaken by several member firms of the British Road Tar Association following the initial research work. The first developments took place in the Midlands and in that area there was now an example of a two-course D.T.S. construction which had successfully withstood the action of heavy industrial traffic for nine years. Substantial lengths of the material had been laid more recently in Devonshire, Yorkshire, the North East area and the Midlands, and trial lengths had been laid in most of the remaining areas of Great Britain.

Extension of the use of the material for airfield surfacings had taken place in recent years, the resistance of the materials to the fuel droppings of jet aircraft being a particular advantage in this context. It had given satisfactory service as the wearing course of dispersal pens and maintenance areas of aerodromes used by jet aircraft in the Yorkshire area, and in 1954 a complete runway of the Civil Airport of Birmingham was laid with the material, the work being carried out by a well-known rolled asphalt manufacturer.

MR. HINCHLEY said the increase, both in the number of motor vehicles using the roads over the past 10 years and the proportion of those using diesel oil fuel, had resulted in bituminous surfaces being frequently damaged by spillage of such oil having a solvent action on the binder. Typical places to be affected were busy streets and bus stops where any loosening of the surface was rapidly exploited by the traffic. Fortunately D.T.S. was almost immune from this weakness as high viscosity tar was nearly insoluble in petroleum fuels of all types. Bus stations and termini as well as aircraft refuelling bays were examples where D.T.S. had been used with success during recent years.

MR. H. C. HITCHCOCK, dealing with 'Surface Dressing and Wetting Agents,' said an effort had been made to estimate the amount of damage attributable to wet weather over the whole country, and while the figures available were not as comprehensive as could be wished, it appeared that much less than 1% of the work was adversely affected. It was possible that the weather was sometimes blamed for bad workmanship. All binders were not of equal adhesive strength in wet conditions. The Road Research Laboratory had developed a test by which the various chemical compounds could be roughly sorted in the laboratory and a list was issued by that organization of wetting agents which showed promise. After the laboratory tests any agent needed to be tested on the road under proper control against binders which contained no additive.

Chemical manufacturers who produced wetting agents were naturally active to further the sale of their products, but it was suggested that in view of the expense involved great care needed to be taken by those responsible for road work to ensure that unnecessary costs were not incurred by the use of materials which under many circumstances might confer no real benefits.

Thanks were expressed to the speakers by MR. C. J. MACDONALD (County Surveyor, Norfolk), and MR. HUNTER-RIOCH thanked his colleagues on the organizing committee for their help in the arrangements, and Mr. Wosencroft (Divisional Press Officer) and his staff for carrying out the work involved in the conference. Before dispersing, the guests were entertained to tea.

INSTITUTION OF GAS ENGINEERS

The Institution of Gas Engineers has published the report of the presentation, discussion, and reply relating to the paper on 'A Cooling and Condensing System on a Large Carburetted Water Gas Plant' by L. Silver at the Autumn Research Meeting last November. Copies, together with the original research communication No. GC15/14 to which the report relates, may be obtained at 1s. 6d. from the offices of the Institution at 17, Grosvenor Crescent, S.W.1. The presentation, discussion, and reply relating to the 31st Report of the Gas Education Committee (together with the original report, Communication 445) is also available at the same price.

COMPANY NEWS

AUCKLAND

The annual report and accounts of the Auckland N.Z. Gas Company indicate a profit for the year, after deductions, of £18,419. This, added to balance of carry forward after deducting the dividend paid in March, 1954, left a balance to deal with of £26,576. After recommending a dividend of 3% for the year, which entailed a total of £15,970, the sum of £10,606 was left to be carried forward.

BRITISH VACUUM CLEANER

In the 51st annual report of the British Vacuum Cleaner & Engineering Co., Ltd., the directors mentioned with regret the death of Mr. Hubert Cecil Booth, 'whose invention of the vacuum cleaner in 1901 gave rise to the formation of the Company.' The directors recommended a dividend payable to the ordinary shareholders at the rate of 30% per annum, less tax. For the year ended September 30, 1954, this absorbed £24,750; payment of dividends on 5½% preference shares, absorbed £4,537. Balance of profit and loss account of the Group to be carried forward was £143,942.

LANCASHIRE DYNAMO HOLDINGS

At a meeting of the Board of Lancashire Dynamo Holdings, Ltd., on April 1, a final ordinary dividend of 11% was recommended, making a total of 15% for the year ended December 31. The net profit of the Lancashire Dynamo Group for the year before taxation amounts to £540,262 (1953—£505,454), from which must be deducted taxation on these profits of £283,872 (1953—£291,813, less taxation provisions of previous years no longer required, £16,266), leaving a balance available for appropriation of £256,390 (1953—£229,907), £49,753 retained in subsidiary companies. Lancashire Dynamo Holdings, Ltd., have received Treasury consent to issue 584,332 ordinary shares of £1 each fully paid by way of capitalization of reserves on the basis of one new ordinary share for each £2 ordinary stock held.

WELLINGTON

At the 85th annual meeting of the Wellington (New Zealand) Gas Company Dr. C. Prendergast Knight, Chairman, reported an increase in net profit of £2,941 over the previous year to £22,631 for the year 1954. This increase had reflected a rise in revenue, which had again reached a record figure, the total of £652,560 being £38,861 above the 1953 figure. The Chairman continued: 'Shareholders will note that revenue from rents and interest has increased from £7,662 in 1953 to £9,826 last year. In the greater part, this reflects a more effective utilization of our property resources, and to a less extent the fact that we have purchased more staff houses. The increase in this portion of our revenue forms a useful contribution to the overhead costs of the business. Although the actual volume of gas sold is below our peak figures, the position has been assisted by a better return from residuals. The directors recommend the payment of a final dividend of 3% on ordinary shares, making 6% for the year. After payment of this we will carry forward a balance of £20,733, being an increase of £1,992 over the amount brought forward from last year. The Board takes some satisfaction in the fact that the Company has maintained an unchanged rate of dividend since 1942 in spite of many difficulties in the intervening years.'

PRIMITIVA HOLDINGS

After providing for the net dividend on the 6% redeemable cumulative preference stock, the accounts of Primitiva Holdings, Ltd., show a deficit for the year ended December 31, 1954, of £3,285. This compares with a deficit of £3,452 for the previous year. The deficit for 1954 has been offset by a transfer from general reserve. No dividends have been received from the Primitiva Gas Company of Buenos Aires or other subsidiary companies in respect of the calendar year 1954, and the Directors confirm their statement made in 1946 that the ordinary dividend paid in that year was the last which could be expected.

PRIMITIVA GAS

Because of the expropriation of the assets of the Primitiva Gas Company of Buenos Aires by the Argentine Government on March 5, 1945, the Company made a loss for the year ended December 31, 1954. This loss amounted to £5,895, which compares with a loss of £7,421 for the preceding year. The loss has been offset by a transfer from general reserve. Having regard to these results, the Directors regret that they are again unable to recommend the payment of a dividend on the ordinary shares. The amount of compensation to be awarded to the Company in respect of its expropriated assets in Buenos Aires has not yet been assessed by the Argentine Courts. In December, 1954, however, the Company submitted formal proposals to the authorities which could form the basis of an out-of-Court settlement of its claims. These proposals are under study by the Argentine Government. No decision has yet been reached by the Argentine Civil Court in connection with the 'Ordinary suit.' This action was initiated by the Company in July, 1953, for the purpose of challenging the existence of excess profits alleged to have been earned under the former municipal contract and also to recover amounts already taken over by the Municipality of the City of Buenos Aires as a result of the Company losing the 'Executive suit.'

Mr. Therm at Home

Mr. Therm was 'at home' to his many friends at Gas Industry House on Tuesday, April 26. After welcoming the guests on his behalf, Mrs. Murphy, the Gas Council's Home Service Officer, invited them to accompany Miss Wood to the delightful Mine-cinema to see a film on the gas cooker thermostat. We would remind our readers of the excellent range of films produced by the Gas Council, particularly those accompanied by teaching notes, which are always available on application to the Gas Council or to local gas offices, or which may even be seen in the cinema at Gas Industry House on application to the Publicity Department.

Coke Price Scheme

The Minister of Fuel and Power has approved the introduction of a summer-winter price scheme for hard coke produced in coke ovens in areas south of a line from the Wash to the Severn, in the East and West Midlands and in Yorkshire. It is hoped to extend the scheme to the North West of England at an early date. Under the scheme, there will be a reduction of 7s. 6d. per ton from the 'basic' prices of hard coke from May 2 to August 31. From September 1 to October 31 the 'basic' prices will apply, and from November 1 there will be an increase of 5s. per ton for the winter period. During the four summer months hard coke will therefore be 12s. 6d. per ton cheaper than in the winter.

The 'basic' prices will be those which are in operation on May 2, subject to any changes authorized from time to time by the Minister of Fuel and Power. The scheme is designed to improve the distribution of hard coke by encouraging stocking during the summer months to avoid the winter supply problems arising from distribution difficulties.

The scheme prices apply to coke *delivered* to consumers during the quoted periods. Coke for blast furnaces and foundries is not affected by the scheme.

A Plan to Convert all of Birmingham's 24,350 street gas lamps to electricity at a cost of £1,300,000 is to be put to Birmingham City Council. The plan, approved by the Public Works Committee, is to borrow £100,000 a year for the next 13 years to do the job in stages. When finished, Birmingham will have more and better lighting. An additional 8.500 lamps will be erected to bring all the street lighting up to the latest standards. Among the first streets to be changed will be Corporation Street, New Street, Victoria Square and Paradise Street in the city centre where the present high pressure gas lamps will be replaced. 'We hope to do this within 12 months,' said a Corporation official. Already a token start had been made in some city streets, and in streets between Broad Street and Bath Row.

Yorkshire High Pressure Main

Work on the North Eastern Gas Board's £250,000 scheme for a new high pressure main linking Bradford with Shipley, Bingley, Keighley and Skipton is proceeding quickly and contractors have started laying the section from Keighley to Steeton. The scheme, which began last year, will mean that ultimately five existing works will no longer produce gas but they will remain as distribution units for the surrounding area.

The Bradford area of the Board follows the natural geographical grouping of the Aire Valley and the £1,500,000 extensions to the Birkshall works at Bradford will mean that surplus gas could be piped to other areas. When extensions at Keighley are completed the two places will be able to supply their own needs and those of Shipley, Bingley, Silsden, Kildwick, and Skipton.

The scheme will improve the economies of the process and will help the consumer. While it will not necessarily mean cheaper gas for those areas it will help to offset the present rising production costs as well as give a better and more constant service.

Pressure in the pipes will be about 25 lb. per sq. in. and pipes vary in diameter from 15 in. to 8 in. Housewives and other gas users will, within the next 12 months or so, be assured of a constant and efficient supply.

Building Exhibition

The 26th Building Exhibition will be held at Olympia, London, this year, from November 16 to 30, and an extensive range of building materials, plant, and equipment will be staged there by more than 50 industries concerned with building. Over 600 stands will occupy an area of 350,000 sq. ft., representing eight miles of exhibits. The exhibition is held every two years, and this year the emphasis will be on new techniques, mechanized equipment for speedy production, newly developed materials, and new ways of construction.

In each exhibition a special display deals with developments in a basic building material. In 1953 prestressed concrete was featured, and this year several firms are individually exhibiting this important technique. The feature this year will be the use of timber in building. The Governments of the timber exporting countries throughout the world are co-operating in making this feature of outstanding interest in focussing attention on new technical developments in the use of timber. Other displays will include new building techniques which are making rapid advances in the building industry, and a number of systems for housing, schools, and industrial purposes will be shown. Noticeable this year will be the number of firms showing mechanical equipment. The industry is making increasing use of mechanical aids, and has been quick to see the value of the new powered equipment, such as dump trucks, mechanical diggers, and excavators.

LABOUR-SAVING FIRES

Speaking at a conference organized by the Women's Advisory Council on Solid Fuel in the Midlands under the Chairmanship of Lady Houldsworth, Mr. A. C. Hazel stated that in his opinion most solid fuel appliances were used intermittently—in other words for a few hours in the winter evenings.

In reply to a question he said that he thought that where coke was the fuel and this fuel was being used intermittently, then the complete answer was gas ignition. He drew attention to the advantages of manufactured smokeless fuels such as 'Coalite' and 'Rexco' and pointed out in reply to another question that their higher efficiency meant that these easy to ignite fuels were cheaper in the long run.

Mr. Hazel blamed the women of this country for their conservatism with regard to solid fuel appliances. He pointed out that the average woman was willing to change her style of hat two or three times a year and she was exceedingly susceptible to fashion as far as clothes were concerned. The new free standing open fires with restricted throats which were so much more efficient than the old fashioned open fire had, he said, been criticized on the grounds of appearance and only because the appearance was different from that of an ordinary open fire. He stated that these new fires were much more labour-saving than the old fashioned fire and they provided a higher standard of comfort with a greatly reduced consumption of fuel.

Mr. Hazel also emphasized the enormous importance of the open fire from a health point of view and felt this was frequently overlooked.

NEW SHOWROOM AT LLANDUDNO

A new gas showroom and demonstration theatre at Llandudno was officially opened on April 15 by the Chairman of the Llandudno Urban District Council, Lieut.-Col. C. B. Arnold, D.S.O., T.D., J.P. Colonel Arnold, who was accompanied by Mrs. Arnold, made the symbolic act of the opening by cutting a red and green tape, the colours of the Wales Gas Board.

After this ceremony, Mr. H. Allerton, Engineer and Manager, thanked the Chairman of the Council, and then Mr. H. Blythe, Chairman of the Colwyn Bay Group Committee, presented Colonel Arnold with a butane gas cigarette lighter and Mrs. Arnold was presented with a bouquet by Miss P. E. Lynch, the youngest member of the staff of the Llandudno undertaking.

The building, which was acquired some months ago, has been transformed to include a large showroom which will accommodate a comprehensive range of appliances and is equipped with modern fluorescent lighting. Suitable points have been installed in order that gas/electric washing machines and refrigerators may be demonstrated. A 'Live Water' heater display unit has been fitted and this will accommodate five water heaters, all of which may be demonstrated.

The first floor has been converted into a demonstration theatre, complete with staging and necessary gas and electric connections. Adjacent to the staging is a preparation kitchen for the use of the Home Service Adviser. The theatre will accommodate approximately 50 people.

This is the Gas Board's first Demonstration Theatre in North Wales. It is intended that the upper floors of the building shall be let off in due course as offices. The building is opposite the Civic Centre and the new shop front has been designed in modern style with contrasting green titles and the single word 'GAS' in red.

Interior of New Gas Showroom at Llandudno.

NEWS IN BRIEF

The National Smoke Abatement Society has removed from Grosvenor Place to Palace Chambers, Bridge Street, Westminster, S.W.1 (T/N TRAfalgar 6838-39). The editorial and advertising offices of *Smokeless Air* share the same address and telephone numbers.

The National Council of Women of Great Britain held a conference on 'The Employment of Women Over 40' at the London County Hall on April 18. Sir Walter Monckton, Minister of Labour and National Service, opened the conference, and the vote of thanks to him was proposed by Dame Vera Laughton Mathews, Adviser on Women's Affairs to the Gas Council.

Salaries of Gas Staffs.—At a meeting of the National Joint Council for Gas Staffs on April 27, consideration was given to a claim from the staff side for increases on all salaries and salary scales. Agreement was reached that graduated increases ranging from £15 per annum to £45 per annum on existing nationally agreed salary scales for men and women would operate in respect of work performed as from April 1.

Pay Increases awarded to workers in the gas industry will cost Belfast Corporation £39,000 a year. Gas workers and shift workers receive 3d. an hour, or 2s. a shift. Increases for building trade workers with extra rates for firebrick work are effective from January 24. The Corporation Gas Committee, on the recommendation of the Engineer and Manager (Mr. J. L. Hyslop), has approved the increases.

The Sales Division of the Aerograph Co., Ltd., moved at the beginning of April into new offices in the same premises as the De Vilbiss Aerograph showrooms at 47, Holborn Viaduct, London, E.C.1. The factory and head office remain at Lower Sydenham, but sales and technical enquiries are exclusively handled at Holborn Viaduct. The central location of the new offices assures better service and attention to customers while the existence of a spacious showroom attached to the offices proves of added interest to all engaged in product finishing.

Mr. G. Thorley, Group Coke Officer for the North Eastern Gas Board, in a talk on the new smokeless zone given to the Bradford branch of the Women's Gas Federation, said that over 250 tons of soot per square mile falls on Bradford each year. Mr. Thorley spent some time extolling the virtues of coke fire. 'When you leave the showroom,' he said, 'don't forget to look at the coke fire there to see what a coke fire really should look like—a deep glowing mass of red hot coke. Wonderful.' The proposer of a vote of thanks to Mr. Thorley affirmed this. 'The only thing is they are sometimes too hot,' she said. When the meeting ended the members were again reminded to look at the coke fire in the showroom downstairs, and they did so, but unfortunately the fire had been allowed to go out!

New Club Rooms for the social club of the Edinburgh Division of the Scottish Gas Board were opened by Sir Andrew Clow, Chairman of the Board, on April 27.

The West Midlands Gas Board is seeking a site in Birmingham to replace its present headquarters, now at 6, Augustus Road, Edgbaston. It is understood it plans to build a block of offices several storeys high. The present house was obtained after a long search. It is leased for a limited period. Accommodation is available only for members of the Board and the secretariat. Specialist officers and their staff are in other buildings. The new offices will bring all the staff under one roof.

Feeling That Adequate Means are available for cooking by means of solid fuel or electricity, members of Ashby (Leicester) Rural District Council have decided not to provide a gas supply for the council house estate on the Pegg's Close site at Measham. The East Midland Gas Consultative Council is to be recommended to report the decision to the Minister of Fuel and Power, with a request that the Minister of Housing and Local Government takes up the matter.

Compensation.—Injured at Bangor (Co. Down) gasworks in January, 1951, Norman Larmour was awarded £1,250 in the Ulster High Court in his action against the Borough Council. Larmour was working at a retort driving machine in the gasworks when he fell off a ladder and his right hand was caught in cog-wheels and severely injured, one finger being amputated.

No Fewer Than three stands are being used at the Ideal Home Exhibition in Edinburgh by the Scottish Gas Board, Edinburgh Division, to show the latest types of domestic gas appliances. Cookers, washing machines, water-heaters, gas fires and radiators, and coke-fired continuous-burning appliances were among the items on display. Other features of the stands were a demonstration theatre and bijou cinema.

Scottish Association of Gas Managers Golf Circle

The winner of the Winson Scott Trophy with the Captain and Committee of the Golf Circle. Left to Right. Front row: J. Ford (President), T. R. Cameron, D. D. Melvin (Captain), W. P. Rae (Secretary). Second row: L. P. M. Gardner, C. A. King, R. Sturrock, W. C. Campbell, D. Fulton. Third row: R. L. Laing, S. Bennet, W. F. Ross, H. A. Aitken, H. A. Aitken, S. Hall

At the Spring Meeting of the Circle played over the Peebles Course on Thursday, April 21, 1955, T. R. Cameron won the Winson Scott Cup and Captain's Prize with a score of 89 less 17 = 72. Other winners were:—

Section I			
1st Prize	G. E. H. Keillor	82- 7	= 75
Tie	R. F. Bell ..	87-12	= 75
	F. Hailstones ..	88-12	= 76
2nd Prize	T. Robertson ..	82- 6	= 76
Tie	D. Harrison ..	88-12	= 76
Section II			
1st Prize	T. R. Cameron ..	89-17	= 72
2nd Prize	F. B. Oliver ..	91-18	= 73
3rd Prize	H. Q. Marris ..	94-20	= 74
4th Prize	G. C. Wood ..	90-14	= 76
Visitors			
1st Prize	W. T. Wright ..	80-10	= 70
2nd Prize	E. J. Spurrier ..	89-16	= 73
3rd Prize	T. F. Grieve ..	86-11	= 75

At the meeting and presentation afterwards Mr. D. D. Melvin (Captain) said they were sorry that their Vice-Captain, Mr. J. G. Couper, could not be present. He was pleased to see Mr. John Ford (President of the Scottish Association of Gas Managers) with them, and fourteen guests, whom he welcomed. Mr. David Sime (Thomas Glover & Co., Ltd.) replied.

Mr. Melvin then presented the prizes and thanked the Town Council for the use of the course. Mr. James Dow (Uddingston) proposed a vote of thanks to Mr. Melvin.

TRADE NEWS

New flame and waterproof terminal distribution box

The General Electric Co., Ltd., has designed a terminal distribution box—said to be flame and waterproof—for employment where complex connections and apparatus are used in wiring installations involving control and indicating circuits, or for power circuits where higher voltages and/or currents may be involved. It conforms to B.S.229 for gases of Buxton Groups II and III and holds Flameproof Certificate No. FLP.3468.

The box is cast in aluminium alloy with two side walls 1 in. thick, through which are drilled and tapped the necessary apertures to accept conduit, flameproof glands or cable sealing boxes. At one end of the box casting is a flat machined surface with a rectangular aperture blanked off by a cover plate secured by four steel screws. By the removal of this coverplate it is possible for similar boxes to be rigidly bolted together to form a composite unit, with a commensurate increase in the number of entries, facilities for the interconnection of cables through the rectangular apertures, and provision of additional terminal arrangements. There are four slotted feet for mounting the box.

The box incorporates a solid aluminium alloy casting machined overall for mounting terminals of the required size and number. The terminals, of plated brass studding, are suitably bushed and secured in position with lock nuts. The standard arrangement caters for a maximum of 52 terminals and a rating of 250 V between terminals at 7½ A. If higher voltages or heavier currents are to be handled, the size of studding and the clearance between adjacent studs has to be increased and panels specially drilled. The upper terminal, or disconnecting link compartment, is enclosed by a cast aluminium alloy cover.

To exclude the ingress of moisture as far as possible at the joint between the box, terminal base, and cover, a continuous Neoprene gasket is tightly sprung around the perimeter of the terminal base. Being slightly deeper than the terminal base, it forms a seal against the overlap of the box and cover, thus preventing the direct ingress of water and minimizing the condensation effect due to breathing. The seal at the faces between adjacent boxes, or the joint between the separate cover plate and the box, should be served with petroleum jelly or an equivalent grease to ensure that this permanent joint remains substantially watertight throughout its life.

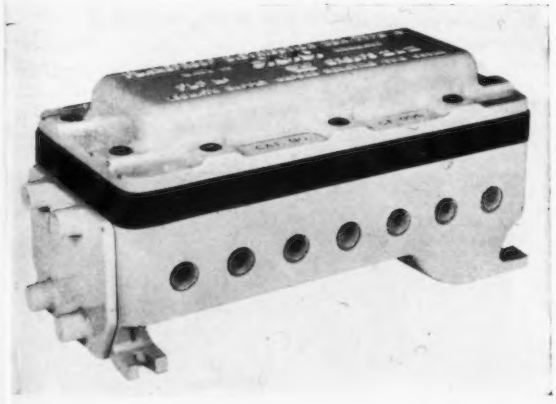
The box has been so arranged that the isolation of individual branch circuits of complex control circuits for testing is facilitated. Testing of the circuits is carried out by the removal of links or wire connection (supplied by the user) in the upper terminal chamber. All incoming and outgoing cable connections are made at the terminals on the underside of the terminal box.—*The General Electric Co., Ltd., Magnet House, Kingsway, London, W.C.2.*

Allweather paints

A new coloured rubber paint specifically formulated to protect and decorate new and old concrete floors, has recently been introduced by Allweather Paints, Ltd. It is claimed that its use on concrete floors eliminates dust and that, being alkali resistant, it can even be used on 14-day old concrete floors without fear of breakdown. Since it is quick drying, the floor is only out of commission for a short period.

Known as 'Pitan' concrete floor paint, this coating is available in a wide colour range. The manufacturers recommend the application of one (dark shades only), two or three coats to provide a dust-free surface which can repeatedly be washed without deterioration.

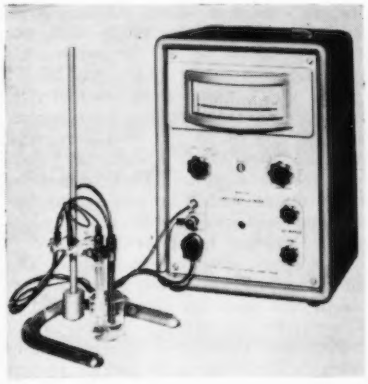
At Stornoway, Isle of Lewis, a great deal of trouble was experienced with the effect of seagull droppings on a gasholder. The crown of the holder was treated with Allweather materials over a year ago, with the object of dealing with this trouble and of reducing corrosion. The District Manager is reported to have told the firm: 'As regards the trouble we experienced with seagull droppings, this was entirely eradicated. In view of the exposed position of this holder, we feel sure you could recommend this paint for other similar holders.' The painting system comprised one coat of 'Pitan' chlorinated rubber paint primer, one coat of 'Pitan' undercoat and one coat of 'Pitan' finisher.—*Allweather Paints, Ltd., 36, Great Queen Street, London, W.C.2.*



G.E.C. flame-and-waterproof terminal distribution box for use where complex connections or apparatus are used or for power circuits where higher voltages and/or currents may be involved

A new pH meter

A new direct reading *p*H meter Model 23A, has recently been announced by Electronic Instruments, Ltd. This instrument is a development of the Model 23 *p*H meter, which was originally introduced in 1947 and which, it is claimed, was the first direct reading *p*H meter to become commercially established in this country.



The direct reading *p*H meter is said to have the important advantage that it can be used by unskilled personnel as, once the instrument is standardized, it is only necessary to dip the electrode system into the solution being measured and to note the *p*H reading on the scale. In the same way, changes in *p*H may be continuously recorded without manual intervention by the operator.

The Model 23A retains all the features of the earlier model, but there are two important improvements. Automatic temperature compensation has now been perfected, so as to make the *p*H readings independent of changes in temperature of the solution being measured; this is an exclusive feature, and makes it no longer necessary to standardize the electrodes at the working temperature, and to apply corrections to the *p*H readings if the temperature limits are exceeded.

The second improvement is the provision of a higher output current (100 microamps per *p*H unit) for operating recording or control instruments, and also the new E.I.L. 'Electro-pneumatic Converter' for direct connection to air-operated instruments.

The Model 23A will maintain a zero stability of 0.02 *p*H almost indefinitely,

despite any normal variations in mains voltage or frequency. In order to take full advantage of the exceptional stability and accuracy of the instrument, a six-inch hand calibrated mirror-scale meter is provided, which enables readings to be made to 0.05 *p*H.

The full range of E.I.L. *p*H electrodes may be used with the Model 23A, including special electrode systems for micro analysis and for continuous sampling under anaerobic conditions. The Model 23A has been restyled and is finished in an attractive shade of chemically resistant enamel.—*Electronic Instruments, Ltd., Richmond, Surrey.*

New diaphragm pump

Research into the problem of providing small quantities of compressed air at low pressures completely free from oil vapour and other impurities has led The Hymatic Engineering Co., Ltd., to introduce two versions of a new diaphragm type compressor. Both providing a free air delivery of 2½ cu.ft. per minute at 35 per sq. in., the two models are designated the 'DP2T' and 'DP11'—the 'DP2T' having its own electric motor flange mounted on the compressor body and the 'DP11' being arranged for belt drive from a separate power source. The equipment is designed for many duties including pressurizing instruments and special processes in industrial or medical laboratories.

The design displays simplicity. The conventional cylinder and piston are replaced by a multi-ply diaphragm, said to thus obviate any necessity for oil in the compression chamber. The connecting rod is an aluminium alloy casting shaped at the top into a circular disc upon which the diaphragm is seated. At the top of the compression stroke, this disc conforms to the contour of the diaphragm

The Hymatic 'DP2T'—one of the alternative versions of a new diaphragm compressor providing a free air delivery of 2½ cu.ft. per minute at 35 per sq. in.

which has its outer edge nipped between the main casting and the compressor head.

The plate holding the diaphragm in position on the disc houses the reed-type inlet valve—air thus being transferred through the diaphragm and its seating. The stainless steel delivery valve of the same type is accommodated in the aluminium alloy head sealing the compression space. This compression chamber is so designed as to help damp out pulsation.

The bottom end of the connecting rod is split to house a sealed ball race constituting the big end bearing. This, like the bearings of the hollow overhung crankshaft, is grease packed so that no servicing should be necessary between major overhauls.—*The Hymatic Engineering Co., Ltd., Redditch, Worcs.*

Compoflex advisory service

A new experimental and development establishment has been opened by Compoflex Co., Ltd., to meet the increasing demand made on their Flexibles Advisory Service. So many organizations are now regularly bringing highly-specialized problems to the company, say Compoflex, often requiring detailed and extensive development work, that the present facilities are proving inadequate.

The new centre has been opened at Godalming, Surrey, to provide facilities not previously available and to bring the development staff together under one roof instead of operating in different parts of the country as at present. Mr. J. Moseley, Technical Director, will be in charge of the new establishment with two assistants—Mr. D. J. Saunders, Chief Development Engineer (Hydraulics) and Mr. P. W. O'Brien, Technical Manager (Special Projects).

In addition to a fully-equipped laboratory the centre is divided into three main sections: Experimental hose-making; plastics extrusion development, and the investigation of hydraulics problems. The hydraulics development section has been formed to carry out flow, mechanical and pressure tests on all types of 'flexibles' made by Compoflex, and will eventually include the design and manufacture of pumps, flow-meters and other hydraulic devices.—*Compoflex Co., Ltd., 26, Grosvenor Gardens, London, S.W.1.*

Industrial eye protection

A new range of attractive spectacles, known as the 'Highway' pattern, have recently been introduced by the Safety Goggles Division of J. & R. Fleming, Ltd.

These are of flesh coloured plastic and, as will be seen from the accompanying illustration, are of modern design. Hockey end sides can be supplied instead of the cable sides shown, and three bridge widths are available, so that it should be possible for everyone using them to be comfortably fitted. A similar frame without sideshields can be supplied for use where frontal protection only is necessary.

Normally 'Highway' spectacles are fitted with 'Armorglass' toughened lenses, to give protection against heavy blows from metal or stone, but a range of coloured lenses is available for those who require protection against glare or infra-red and ultra-violet radiations.—*Fleming Safety Goggles, 146, Clerkenwell Road, London, E.C.1.*

'Highway' safety spectacles by J. & R. Fleming, Ltd., Hockey end sides can be supplied instead of the cable sides shown. Three bridge widths are available

TRADE PUBLICATIONS

Pipelaying equipment

Verrolec, Ltd., Balfour House, Finsbury Pavement, Moorgate, London, E.C.2, have published leaflets of (1) the 'Exact' hand-operated pipe-cutting tool, (2) the self-erecting gantry, and (3) a wall channeler, which can be used for cutting channels into brick and other material to lay pipes and conduits.

Fire fighting

If trade publications passed a censorship, *Fire Fighting News* by Nu-Swift, Ltd., Elland, Yorkshire, would deserve an 'X' certificate. The removal of a man dying of burns from a blazing building, and the seared body of a child who suffered in agony for eight weeks before dying of her burns, are sensationally presented to emphasize the importance of fire-precautions. 'Nu-Swift' extinguishers are claimed to prevent confusion as they are operated in the upright position.

Electro-magnetic transducer system

A publication describing the operation of the S.E.I. electro-magnetic transducer system has recently been issued by Salford Electrical Instruments, Ltd., Peel Works, Silk Street, Salford 3, Lancs. The system, which enables a reading to be taken at a distance of up to 1,000 yards from the point at which the actual measurement is made, is said to be highly versatile. It is used in the aircraft industry, in asbestos sheet manufacture, in plastics production, in rolling mills and in coal bunkers, as well as for many other applications. The new publication includes a general description, describes the standard heads and indicating instruments used with this system, and shows six typical applications in diagrammatic form; a full technical specification is also included.

In the April 20 Trade News feature, we stated that Baird & Tatlock (London), Ltd., *produced* the 'Electrothermal Bunsen.' This should have read *supplied.*

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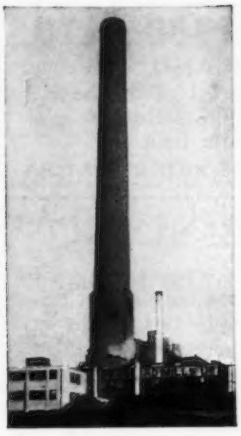
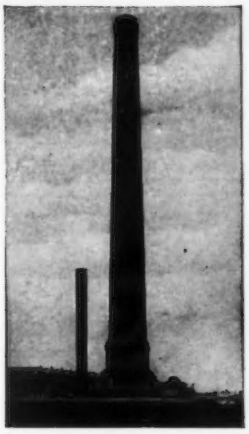
Left : Trial borings for reconstruction of Coventry Cathedral.





Two of the largest chimneys in the British Isles; on foundations of Francois Concrete Piles (left) and Francois Cementation Piles (Right)

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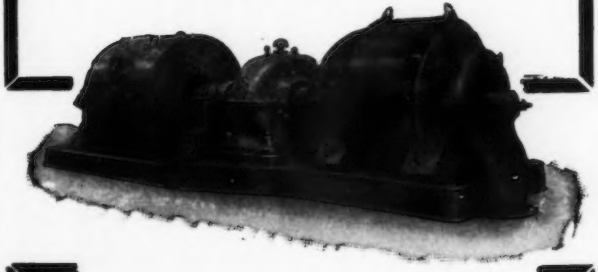

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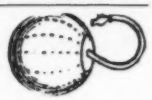
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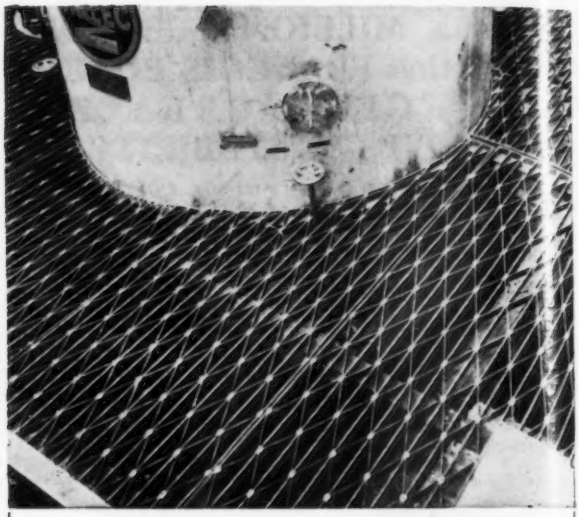
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. . . and viewers, of course. The evil eye seen above may be looking for atom plans, ankles, or evidence, but this is not the sort of viewer we had in mind. The stereoscopic viewer, showing 3-D pictures in colour, is the salesman's latest weapon, and its usefulness increases in direct relation to the size of the thing he is selling. You pop in a slide, press the button, and there you are—you are there. But the production of slides is a job for the expert. If you are interested. you would be well advised to contact **Walter King Photographs** at 11, Bolt Court. Fleet Street, E.C.4. (CEN. 2236).

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APPOINTMENTS VACANT

The engagement of persons answering these advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive or a woman aged 18-59 inclusive unless he or she, or the employment, is excepted from the provisions of the Notification of Vacancies Order, 1952.

A FIRM specializing in the construction of Gasholders, Steel Tanks, and Gas Works Plant require the services of an experienced SUPERVISOR, whose duties will include arrangements for and supervision of erection of various contracts in course of erection.

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Apply No. 238, *Gas Journal*, 11, Bolt Court, Fleet Street, London, E.C.4.

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JUNIOR HEATING ENGINEERING ASSISTANT required. Salary £285 p.a. at 20 rising to maximum of £500 at 30. Initially unestablished subject to 6 months probation, medical assessment and prescribed conditions. To assist in drawing office with some clerical duties; opportunity to acquire knowledge of design of engineering services in large public buildings. Application forms (stamped addressed foolscap envelope) from County Architect, 1, Queen Anne's Gate Buildings, Dartmouth Street, Westminster, S.W.1, returnable by May 16. (Quote Q 306 GJ.) Canvassing disqualifies.

THE DOWSON & MASON GAS PLANT CO., LTD. Alma Works, Levenshulme, Manchester, 19, are expanding their activities in the building of many types of INDUSTRIAL FURNACES, and are requiring SERVICE ENGINEERS whose duties will include supervision of erection on site, starting up new installations and contract maintenance. Applicants should give details of experience, technical qualifications, and age.

NATIONAL COAL BOARD invite applications for a superannuable appointment in the Carbonisation Department at London Headquarters.

Candidates should hold a recognised qualification in fuel technology or gas/chemical engineering, and should have experience either in design and operation of carbonisation and ancillary plant, or in research in fuel, carbonisation and associated problems.

Appointment will be as Carbonisation Technical Officer Grade II (salary range £800—£1,150 male), or Carbonisation Technical Officer Grade III (salary range £500 to £900 male), according to qualifications and experience. London Location Allowance of £34 minimum, rising to £82 maximum, is payable in addition.

Write, giving full particulars (in chronological order) of age, education, qualifications and experience (with dates) to National Coal Board, Establishments (Personnel), Hobart House, Grosvenor Place, London, S.W.1, marking envelope TT/970. Original Testimonials should *NOT* be forwarded. Closing date, May 31, 1955.

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FIRST Class Gas Fitter required to work in the Haverhill District. Full J.I.C. Rates of Pay (Provincial 'B') and conditions of service.

A good house is available at the Works entrance, at a nominal rental.

The successful candidate may be required to pass a medical examination.

Applications, giving age, present duties and references, should be addressed to Mr. H. R. Thomas, Group Manager, Gas Works, Bury St. Edmunds, Suffolk, within two weeks of the appearance of this advertisement.

EASTERN GAS BOARD

(CAMBRIDGE DIVISION)
PETERBOROUGH DISTRICT
DISTRIBUTION FOREMAN

APPLICATIONS are invited for the position of DISTRIBUTION FOREMAN at Peterborough District. Candidates should have good practical experience in laying of cast iron mains of all types and service laying. They should also be experienced in supervising and organising the work of main and service laying squads. The person appointed will be required to deputise when necessary for the Distribution Superintendent.

The salary offered will be not less than £455 per annum.

A flat is available at a moderate rent.

The successful candidate may be required to pass a medical examination.

Applications giving full details of traininfi qualifications and experience, together with the names of two referees, should be sent to the General Manager, Eastern Gas Board, Divisional Chief Office, 52, Sidney Street, Cambridge, by May 21, 1955.

EAST MIDLANDS GAS BOARD

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THERE is a vacancy for a FIRST CLASS GASFITTER at the Market Harborough Undertaking (Provincial A). Service Occupancy of a flat is available on reasonable terms.

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H. B. TAYLOR,
Divisional General Manager.

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APPROVED manufacturers of Gas-heated Wash Boilers and Washing Machines require experienced Sales Representatives to cover the North Western and North Eastern Gas Board Areas. Applicants will be required to reside in the area and should state age, qualifications, experience and salary required. Apply: No. 236, *Gas Journal*, 11, Bolt Court, Fleet Street, London, E.C.4.

NORTH WESTERN GAS BOARD

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The salary will be within Grade A.P.T. 11 (£785/£910 per annum).

The successful applicant will be responsible to the Station Engineer for conducting all necessary chemical tests connected with the operation of the works and to carry out any special investigations which may be required from time to time.

Applicants should possess suitable technical qualifications and gasworks experience although not essential, will be an advantage.

Detailed applications, giving the names of two referees, should reach the General Manager, N.W.G.B. (Central Lancashire Group), Dane Street, Rochdale, within 14 days.

SOUTH LANCASHIRE GROUP.

TECHNICAL ASSISTANT (Production)—St. Helens Works.

The salary will be within Grade A.P.T. 6 (£565/£645 per annum).

Preference will be given to applicants with mechanical and electrical engineering training and some drawing office experience.

Applications giving details of education, training and experience, together with the names of two referees, should reach the General Manager, N.W.G.B. (South Lancashire Group), Radiant House, Cotham Street, St. Helens, within 14 days.

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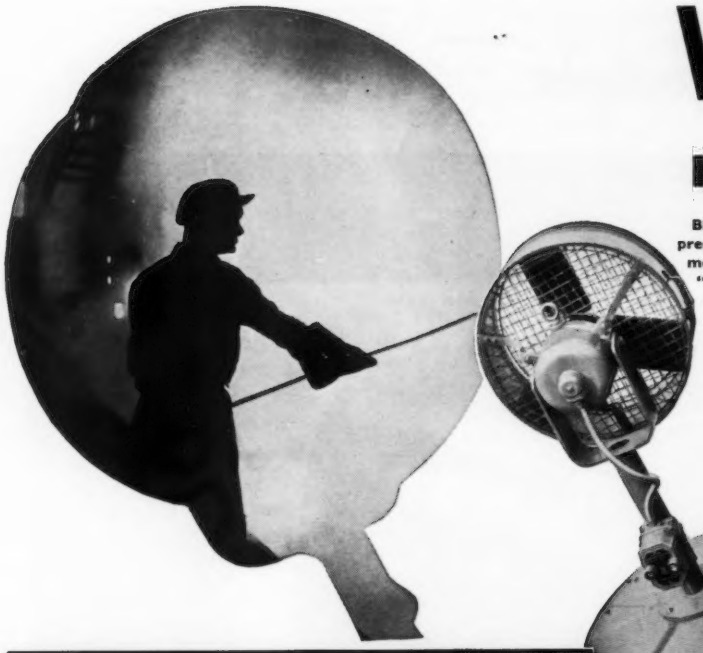

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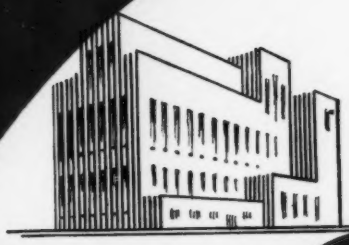
Two sides to the question . .



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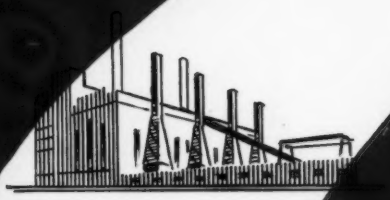

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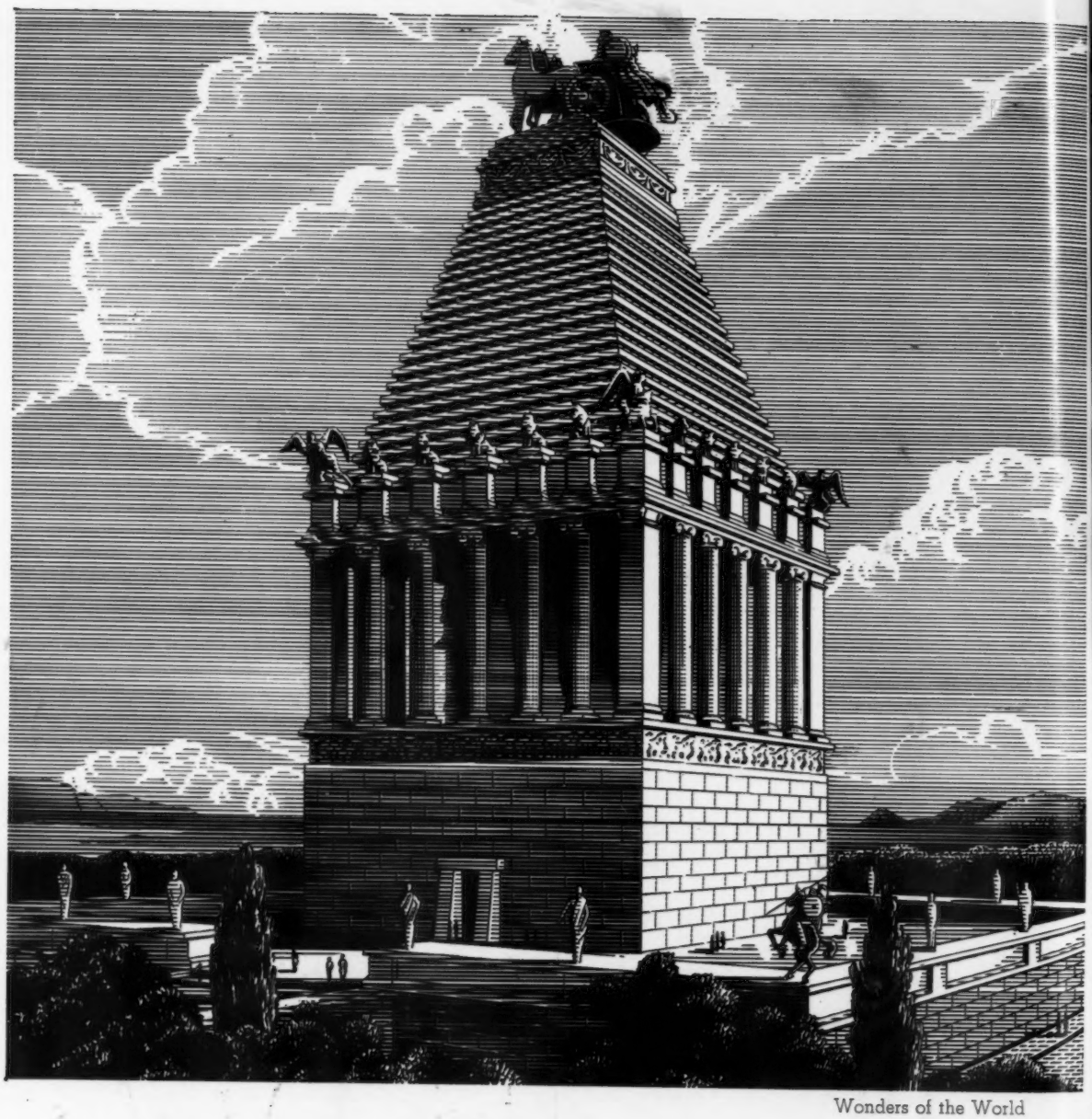

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